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**URBAN MALARIA: A COMPARATIVE ETHNOGRAPHIC STUDY OF
THE LOCAL RESPONSE IN BOMBAY AND NEW BOMBAY, INDIA**

Draft for Comments and Corrections

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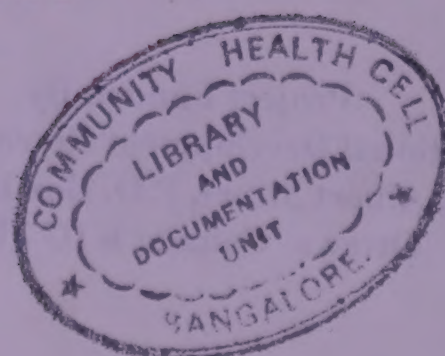
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LOCAL RESPONSE TO COMMUNITY HEALTH
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Project Summary

In spite of several decades of anti-malaria measures, malaria in India continues unabated. Its persistence in the urban areas in particular has been the result of a confluence of several factors. Notably, large scale construction and development activities, uncontrolled population movements, inefficient vector control and surveillance activities, the public health bureaucracy's limited appreciation of the human dimension of the problem, and ambivalent involvement of the private health sector in the diagnosis and treatment of malaria, have all contributed to the worsening of India's urban malaria problem. Furthermore, resistance to insecticides by the malaria vector, and of the parasites to anti-malarials has been greatly fostered by the indiscriminate use of insecticides in vector control, and anti-malarials often at sub-therapeutic levels in the treatment of febrile illnesses. The recent resurgence of malaria witnessed in Bombay and New Bombay provides an example *par excellence* to investigate the current trend regarding malaria in urban India.

Entomological and epidemiological facts about the recent resurgence of malaria in Bombay and New Bombay were readily available, but ethnographic details about how the affected urban neighborhoods interpreted the illness, and the cultural meanings they attributed to therapeutics and outcome were lacking. Given the imperative for such knowledge in the success of any urban malaria control program, the present study was carried out to document how people who lived in urban and peri-urban areas responded to malaria or suspected malaria at the individual, household and the neighborhood level. The study was conducted with the following objectives: To (a) document whether and how people who live in urban areas perceive and differentiate malaria from other forms of illness that are complicated by 'fever', (b) identify local health concerns regarding

vulnerability of certain segments of the population to malaria, and to make interlocale comparisons of the responses, (c) ascertain the measures people take to prevent malaria at the household level, and to compare the perceived efficacy of individual, household and community-based/local municipal health authorities initiated anti-malaria control measures, (d) ascertain the attitude of local people toward government health functionaries engaged in anti-malaria activities, (e) document malaria related illness stories of people to highlight the suffering and disruption in everyday life furthered by the illness (f) observe and document interactions between malaria patients and private medical practitioners to feature how private practitioners diagnose, advice and give treatment to such patients, (g) ascertain the health expenditures incurred in the treatment of malaria, and to document the manner in which family members mobilize resources, reallocate household resources to deal with an episode of malaria in the family, and (h) explore the scope of community participation at various levels in anti-malaria programs.

Methodology

The study was conducted in eight malaria endemic municipal wards - four each in Bombay and New Bombay with a comparative perspective. The conditions in these two cities were compared to find out how people who live in very different socio-spatial configurations interpret and respond to malaria at a time when the environment and socio-economic realities were rapidly changing. Households, private medical practitioners and private pharmacies constituted three interrelated units of analysis. Four hundred ethnographic interviews were conducted with heads of households/prime caretakers belonging to families that had experienced an episode of malaria or had been treated for suspected malaria. Participant observation in homes, interviews with 48 private medical practitioners, and participant observation in eight private pharmacies was

combined with exit-interviews with 40 customers purchasing anti-malarials. The data thus obtained were subjected to standard quantitative and qualitative analysis.

Major Findings

1. Most of the people in Bombay and New Bombay believed that "malaria" or its vernacular equivalent *thandi-tap* (Marathi) or *thandi-bukhar* (Hindi) was a common illness in their neighborhood, and that its intensity had significantly increased over the years.
2. People in both the cities were remarkably familiar with the typical symptoms of malaria and could make a distinction between malaria and other illnesses complicated by fever.
3. Explanatory models of the people of Bombay and New Bombay about malaria incorporated mosquito as a causative agent, but mosquitoes were seen as manifestation of wider environmental deterioration - air and water pollution, accumulation of garbage and blocked drains - sites that attracted mosquitoes. Nevertheless, people did not make a distinction between the day-time biting culex mosquitoes from night-time biting anopheles mosquitoes.
4. The people of Bombay and New Bombay commonly blamed other social groups for all the malaria that was there in their neighborhood. In Bombay, the wealthy people blamed the slum dwellers and "unhygienic" servants, and the natives of villages in New Bombay blamed the migrants and CIDCO's inefficiency as the cause for the upsurge of malaria in their neighborhood.
5. The majority of the people in both the cities believed that malaria was "transmittable," but not "contagious." In New Bombay in particular, people believed that malaria was also transmitted from one person to another by means of a healthy person inhaling the *vaas* (smell/body odor/breath) of an infected person, and transference of the infected person's *uob* (body warmth) into a healthy person, who eventually contracted malaria.

6. Regardless of their socioeconomic status, most of the people in both the cities believed that no one was particularly vulnerable to getting malaria. In terms of “degrees of vulnerability,” they believed that those who were constitutionally and nutritionally weak were more vulnerable, but this “weakness” has little to do with the age or sex of individuals.
7. The illness stories told by the people of Bombay and New Bombay encoded the reality that households often experienced multiple episodes of malaria simultaneously. The meanings that people attached to the illness revealed that malaria meant far more than a disease to them. It epitomized suffering, mental agony, economic hardships, disruption in the everyday life, and often impending death.
8. Past experience with repeated attacks of malaria had heightened people’s symptom sensitivity, but this had not significantly influenced their promptness in seeking treatment. Decisions in this regard were largely governed by economic considerations and issues of accessibility. Indeed, repeated attacks had made illness management difficult and complicated.
9. One-third of the households had not incurred any expenditure on the treatment of the most recent malaria episode. For the others, bringing cure meant having to spend between as little as 2 Rs to as high as 10,000 Rs.
10. Two-fifth of the respondents claimed that they were not afraid of contracting malaria again. Those who were afraid of getting malaria over and again, were frightened not only because of the possibility that “it could go into the head” (cerebral malaria) and bring death, but also because it brought enormous financial hardships and disrupted family life.
11. Self-medication was often the first resort, but for various reasons people in both the cities preferred to go to a private practitioner for treatment albeit it was expensive to do so.

Dissatisfaction with the public health system and poor accessibility was a reason for the people of Bombay and New Bombay to resort to private practitioners. At the same time, people were also critical of practitioners, especially in New Bombay where they were frequently characterized as being unsympathetic, greedy and interested only in making money out of their patients' misfortunes.

12. Anti-malaria therapy in both the cities (particularly in the slums and villages of New Bombay) constituted expensive modes that regularly included injections and I.V. drip salines.

13. The majority of the people in Bombay and New Bombay relied on ceiling fans and technical fixes such as "GoodKnight" as mosquitoes and malaria prevention measures. Whether they were consciously using these measures to prevent malaria, or primarily to ward off mosquitoes because of their nuisance value, was unclear. Bednets were among the least popular measures used by the people of Bombay and New Bombay. The extensive use of technical fixes represented a trend where people preferred to manage malaria as an individual and household level problem rather than a community level concern.

14. Most of the people in the neighborhoods where the research was carried out held that there was poor scope for community participation because people had become increasingly *swarthy* (self-centered), and that they were preoccupied with their everyday hardships and simply did not have time for community health activities.

15. The study revealed that there prevailed a deep sense of uncertainty regarding the malaria situation in the coming years, in the minds of the people of both the cities. People believed that it was unlikely that the malaria situation would improve in the coming years, and many indeed feared that the worst was yet to come.

16. The study documented the fact that private practitioners and private pharmacies played an immensely important role in the prevention, control and treatment of malaria in both the cities. Especially in New Bombay, interaction between malaria patients and the private health sector was far more intense than it was with the public health sector.
17. In New Bombay, several practitioners who were trained in non-western systems of medicine freely used allopathic drugs. Almost all them treated their patients with sub-therapeutic doses of anti-malarials and antibiotics. This mode of treatment was more pronounced in New Bombay because practitioners feared that if they wrote a prescription for expensive drugs, the patient will not comply with the recommended treatment, and instead go to another practitioner.
18. Doctor-patient interactions involved very little verbal interaction. Patients rarely asked questions to their doctors regarding the identity of their ailment, and in turn practitioners rarely volunteered information or gave advice to their patients regarding malaria prevention.
19. Most of the practitioners saw a link between mosquitoes and malaria, but their descriptions of where malaria mosquitoes breed were inaccurate in entomological terms.
20. Practitioners in both the cities neither relied on the patient's malaria parasite blood report nor on diagnosis by treatment, but instead on the symptoms that the patient reported to them, and the clinical symptoms they noticed in the patient. Practitioners rarely advised their patients to go for a malaria parasites blood test. A blood test was indicated only in the rare event when a patient exhibited symptoms that were not distinctly indicative of malaria, or a patients was not responding to treatment.
21. The majority of the practitioners in both the cities had changed their first line of treatment and prescription patterns (dosage/schedule etc.) for malaria had changed during the past 2-3 years.

Most of the practitioners in Bombay continued to rely on chloroquine as the first line of treatment, but had recently started prescribing quinine sulfate, primaquine and occasionally mefloquine. Whereas, practitioners in New Bombay, besides prescribing newer brands of the same drug (chloroquine, quinine and primaquine) had started prescribing quinine sulfate either as a first line of treatment or as a follow-up treatment if chloroquine therapy failed to give good results.

22. Three-fourth and two-thirds of the practitioners acknowledged that injections and I.V. drip salines were very popular with their patients, respectively.

23. Over-the-counter purchase of anti-malarials was not as common as made out to be by practitioners in Bombay and New Bombay. A large majority of the people bought their anti-malarials at a private pharmacy against a prescription. However, nearly half of the antimalarials and adjunct drugs were bought in sub-optimal doses. Exit-interviews with customers corroborated the trend noted in the drug sales pattern which clearly showed that quinine therapy was gradually replacing chloroquine therapy as the first line of treatment.

Conclusion

The study raised several issues of consequence to malaria control in Bombay and New Bombay. It documented the fact that for the people of Bombay and New Bombay, malaria meant far more than a disease. It epitomized suffering of various kinds. Given the enormous hardships that malaria has brought to bear on the people of both the cities, it is imperative that urgent steps be taken to control the malady, before the trend worsens. In Bombay, the solution to the problem essentially narrows down to the issue of tightening up of the public health machinery and

“resurrecting” the sense of discipline, commitment and coordination that once signified the success of the system. The MCGB has the best of resources at its disposal. It has all the required expertise and stringent by-laws to augment its mosquito abatement and malaria control activities. Alongside rendering the well-know *A. stephensi* breeding sites in the city (wells, cisterns, fountains, leakages, etc) mosquito-proof, it is important that the MCGB focuses its attention on the wanton construction activities in various parts of the city that have led to the proliferation of *A. stephensi* breeding sites. If the current situation is to be reverted to the pre-resurgence era, it is inescapable for the MCGB to implement the existing by-laws in the strictest possible terms. At the same time, its efforts must be augmented by disciplined vector control and surveillance activities that should particularly cover the well-to-do localities which offer the most productive and perennial *A. stephensi* breeding sites. Until such time that the efficacy of eco-friendly alternatives (as against insecticides) is established, the existing measures should be thoughtfully implemented. The nature of the malaria problem in New Bombay on the other hand is significantly different from what is witnessed in Bombay. The magnitude of the current malaria problem in New Bombay can be traced down to distorted town planning marked by rampant construction activities with little or no vector control measures, a nascent municipal corporation with limited resources, a failed experiment of contracting out vector control activities to a private agency, an abysmally poor public health infrastructure, and an unbridled private health sector. Unless the NMMC implements its Urban Malaria Scheme in all earnestness, it is unlikely that the situation will improve in the coming years. As in the case of Bombay, the NMMC also should not ignore those localities and sectors where the better-off sections of the society live. By restricting its surveillance and pest control activities only to the low income areas (slums and villages), there is

only a dim chance that the transmission cycle will be broken, and the malaria situation restored to normalcy.

The suggestion that the malaria problem in Bombay and New Bombay can be best tackled by increasing the municipal workforce, and thus coverage, seems untenable. At issue is whether to opt for an expansion in the work force necessary to do the surveillance and pest control without ensuring the entomological realities that determine stable transmission pattern - namely, mosquito breeding and mosquito biting behavior, or to ensure the efficiency in the performance of the existing staff. An increase in the number of surveillance staff will automatically result in more number of cases being detected, but this measure as a solution that was "long due" is unlikely to resolve the essence of the problem.

In conjunction with these efforts, there is an urgent need to design and implement an intervention program aimed at imparting appropriate malaria related health education to the people of Bombay and New Bombay - especially in the worst affected areas. Included in the health education program should be a theme that would help people to understand the life cycle of the mosquito and identify the "real" malaria mosquito breeding sites.

An issue of practical importance that needs to be resolved is whether anti-mosquito measures should be directed solely at the known anopheles breeding sites, or should the nuisance mosquito breeding sites also be included in the strategy. Urban malaria control involves the issue of responsibility about environmental maintenance - specifically, who is responsible for maintaining

the quality of the “microecology” - the preclusion of mosquito breeding sites. Within the household, the issue often becomes gender sensitive, given that in most communities, female members are more closely associated with water maintenance. In the immediate context, it becomes an issue of households versus the neighborhood, and in the larger context, it emerges as an issue that necessitates the dovetailing of efforts of neighborhoods and the health bureaucracy.

In the current circumstances, the responsibility for controlling malaria cannot be transferred in its entirety to the local people, for it is neither desirable nor practical. The issue of community participation in urban situations is complicated by the fact that many urban neighborhoods exist in a dynamic flux. The physical and social space of urban dwellers is affected by the constant movement of people in and out of neighborhoods.

The suggestion that permethrin or diethyltoluamide-impregnated window and doorway curtains, and bednets be promoted as a front-line preventive measure against malaria is unlikely to meet with much success in an urban setting, especially in slums where people are confronted with practical problems such as lack of living and social space, large family sizes, and poverty. Even if impregnated bednets were to be promoted on a large scale in urban areas, it is unlikely that people will do away with the commercially purchased antimosquito consumables, and opt for the net.

It is imperative that the municipal corporations in both the cities prioritize their antimalaria intervention toward vector control to first of all break the transmission cycle that has set in and is perpetuated by several factors. At the same time, local sentiments cannot be overlooked. In

proposing urban malaria control programs, it must be remembered that the benefits anticipated by those who design the interventions may not be apparent to the community and instead outcomes that are immediate and tangible might receive greater importance. In other words, interventions that are congruent with local beliefs regarding the etiology of the illness might be better than interventions that “make no sense” to the local people.

It would be very important to acknowledge the decisive role that private practitioners and pharmacies play in urban malaria control. If the current prescription practices of private practitioners - sub-optimal doses that address patient demands of symptomatic relief - continue, the problem of drug resistance and all that it entails in terms of wider ecological damage, will aggravate at a faster pace than anticipated.

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Urban Malaria Project

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CHAPTER I

INTRODUCTION

The history of our fight against malaria highlights one of the reasons for our failure after almost a 100 years...our efforts have largely failed. Everywhere we hear not only the increased spread of resistance to insecticides, but also of the increased spread of resistance to drugs on the part of the parasites, for they too have been under-estimated. But there is another reason for our failure...while we continue to study the behavior of the parasites and the insects that transmit so many of them with all the ingenuity and sophistication that we can muster, studying each down to the molecular level, we utterly neglect the third factor in the equation - namely, the behavior of man himself (Gillett 1985 p15).

Malaria¹ is a major killer and debilitating disease especially in the tropical world where children and pregnant women are its principal victims (Reuben 1993; Jackson 1985). It is currently the most widely distributed disease, with about 40% of the world's population in 103 countries at some risk of contracting the disease (Knudsen and Sloff 1992). The global incidence of malaria is estimated to be nearly 120 million clinical cases each year, with nearly 300 million people carrying the parasite at any given point of time (Gomes and Litsios 1993; WHO 1993).² Current estimates of the global malaria trend suggest that the situation is getting worse, with the number of "hot spots" growing, and the prospects for reversing the trend appear to be grim (Litsios 1996; Brown 1996; Brown 1992). In Tropical Africa, where malaria transmission is stable and most intense, an estimated one million children under 14 years of age die yearly from malaria complicated by

¹ Malaria is an infection caused by protozoa of the genus plasmodium. The disease is transmitted from one human to another by the bite of an infected female mosquito of the genus *Anopheles* (Katz *et al.* 1982). There are four species of plasmodium that commonly infect human beings - *P. falciparum* ('malignant tertian'), *P. vivax* ('benign tertian malaria'), *P. malariae* and *P. ovale*. All four species of the parasite are transmitted by species of anopheline mosquito. There are over 400 species of *Anopheles*, but only about 50 are important vectors of malaria (Lines *et al.* 1994). In India, there are 9 vector species of *Anopheles*, of which *A. culicifacies* is most widely distributed throughout the rural areas (Sharma 1987), and *A. stephensi*, which is the notorious urban malaria carrier of India, is known to have adapted itself to the conditions in towns and cities (Covell 1931). All species of *Anopheles* breed in aquatic environments and the larvae are highly specialized for life in the surface film. The larvae prefer low running and clear waters with pH near neutral, and sunlight during a portion of the day (Coimbra 1988).

nutritional and other problems (Agyepong 1992; Marshall 1990).³ Outside the continent of Africa, over 1/3rd of the currently reported cases of malaria are from India. Current appraisal suggests that the malariogenic potential in this subcontinent is rapidly increasing (Sharma 1996).

Malaria in India

Malaria has been India's blight for many years. During the late nineteenth and the early twentieth century, it was responsible for as many as 20 million deaths, one in every five deaths recorded, and the morbidity figures were significantly much higher (Arnold 1993; Klein 1973).⁴ Yet, the plague outbreak of 1896 in Bombay and other parts of British India, had attracted far more attention of the powers that be at the time as compared to malaria and Ross' path-breaking identification of the anopheles mosquito as the vector for malaria in 1897.⁵ Malaria never commanded any government inquiry as visible as the Plague Commission of 1898 (Bynum 1994).

As Arnold (1993) has explained:

The significance of plague for the political epidemiology of colonial India was far greater than that of the concurrent epidemics of malaria or influenza, even though

² Sturchler has argued that the number of malaria cases per year cited by WHO is an underestimate by a factor of 5 or more (Sturchler 1989).

³ Malaria in most of Africa is transmitted by the incredibly efficient vector *anopheles gambiae*. It has been estimated that to interrupt the current level of transmission, 50 percent of the entire anopheline population would have to be killed off *each and every day* of the five-year attack phase of the eradication program (Desowitz 1991).

⁴ The period between 1896 and 1919 in India has been the subject of considerable historiographic research. Much of the interest in this period has been prompted by the ramifications of the plague in Bombay (1896) and elsewhere (estimated to have caused 10 million deaths), and the influenza pandemic of 1918-19 (Mills 1988) (estimated to have left more than 12 million Indians dead) (see: Arnold 1987; 1988; 1993; Catanach 1988; Klein 1988; Chandavarkar 1992; Harrison 1994). Ross' discovery of the malaria vector during this period, and the politics that surrounded the discovery have also been the subjects of historiographic analysis (Desowitz 1991; Harrison 1996).

⁵ Up until then, there were essentially two methods of preventing malaria: the drainage or avoidance of swampy areas, clearing of vegetation, forests, land filling (in accordance with the miasma theory), and the prophylaxis provided by various cinchona preparations, most commonly quinine. By 1900, the colonial government had taken measures to implement extensive drainage schemes in most of the larger Indian cities. Besides, quinine powder was manufactured in the Madras Presidency, though it was not usually sold on the open market, but at a cost to medical departments for distribution among government employees, soldiers, and plantation workers - it was not readily available to the general populace (Harrison 1994; 1996; Muraleedharan 1991; Muraleedharan and Veeraraghavan 1992).

in any given year the mortality they caused might have been considerably greater. Plague, like smallpox and cholera, dramatically restated the centrality of epidemic disease to the colonial state, medicine of the period; but it also emphasized the enormous differences in perception and response-indigenous and colonial alike-between one epidemic disease and another (Arnold 1993, p202).

Despite the burgeoning knowledge about the bionomics of malaria as a result of the findings of several malaria surveys conducted in various parts of India (Sinton 1929), there was no appreciable decrease in the malaria related mortality and morbidity rates during the early decades of this century. According to Harrison:

Medical desirability and practical limitations were by no means the only determinants of malaria policy in [colonial] India. Much depended on the willingness of the government to finance malaria schemes, and on the financial and political circumstances affecting municipalities and local boards. After the apparent failure of experiments at Mian Mir [military cantonment in the Punjab] and several uncoordinated attempts at mosquito eradication in other parts of India, there was something of a lull in anti-malarial activity. Where preventive measures continued, they had been integrated, and were barely distinct from ordinary sanitary activity. Provincial governments and local and municipal boards were generally reluctant to allot funds for 'special malaria work' or 'experimental demonstrations.' ...The first major initiative from the Indian government was its decision to convene an Imperial Malaria Conference at Simla in October 1909. The conference led to the creation of the Central Malaria Committee which was to direct investigations into the epidemiology of the disease and to supervise practical measures conducted by special malaria committees in each province (Harrison 1994, p163).

At any rate, the malaria situation in India remained unchanged until the 1940s. In 1945, following the first major large-scale trial in applications of DDT along the Tennessee River in the United States of America, a supply of two tons of DDT which had been imported into India for military purposes was made available to the Bombay Malaria Organization (in September 1945) for field trials that proved to be remarkably successful in the project areas (Covell 1955; Rao 1950). Yet, in 1947 there were an estimated 75 million malaria cases with 8 hundred thousand deaths

occurring every year (Akthar and Learmonth 1977; Ray 1977).⁶ Following the launching of the Global Eradication of Malaria Plan that emanated from the World Health Organization's headquarters in Geneva (Desowitz 1991), the Indian government launched its National Malaria Control Program (NMCP) in 1953 with the support of the WHO, USAID and Rockefeller. The main strategy followed to control malaria was the use of pesticides to kill anopheline mosquitoes and treat infected individuals with quinine-related drugs - mainly with chloroquine that had been recently synthesized (Marshall 1990). The initial spraying operations to control the malaria vector under NMCP produced spectacular success. By 1957-58, under the NMCP, a population of 165.15 million was protected from malaria (Sharma 1996). In its enthusiasm over the successes achieved in malaria control, and in accordance with the WHO's newly designated "eradication" program, the government redesignated the national program as the National Malaria Eradication program (NMEP) in 1958, and the entire country was brought under the program.^{7 8} In the years that followed, there was a rapid fall in morbidity and mortality resulting from malaria, and by 1960 eradication was almost within the grasp. At this juncture, it was estimated that there were only one hundred thousand active cases with no deaths reported in that year (Dutt *et al.* 1980).

⁶ This excludes those who died from associated complications, such as pregnant women or those weakened by malaria, who more easily succumbed to something else (Jeffery 1988).

⁷ From 1958 to 1962-3, India received DDT under the US-AID program. Meanwhile, the infrastructure was developed to facilitate local manufacturing capacity. Subsequently, India purchased about 60% of the annual requirement of 9000-16000 metric tons, and the remainder was indigenously manufactured. But imports faced delays and financial constraints, while local production was frequently interrupted. As a result, there was an annual shortfall of 13-34% of the required capacity during the late 1950s and mid 1960s (Sharma 1987).

⁸ In a recent review of the background events that determined the WHO's decision to launch the global malaria eradication program, Packard points out, "The threat that resistance represented for malaria control became a central argument for transferring control programs into eradication programs with the goal of eradicating malaria before resistance became so wide spread that control efforts would be ineffective." (Packard 1996, p13). Thus, the decision of the Government of India to shift from the control and containment approach to an eradication strategy, was more in consonance with the developments that took place at the international agencies level, than from any particular developments that took place within the country.

However, the euphoria surrounding the spraying strategy soon dwindled, and the late 1960's witnessed a period of resurgence of malaria in India as in various parts of the globe (Sharma and Mehrotra 1986; Farid 1980). The annual number of cases rose again to over half a million in 1970 (Chapin and Wasserstorm 1983; Cleaver 1977).⁹ The Government of India acknowledged the gravity of the situation and abandoned the eradication strategy in favor of a revised strategy known as the Modified Plan of Operation (MPO) implemented in 1977, by which the eradication program was replaced by a program of control and containment (Sharma and Mehrotra 1986; Sharma 1987). Nevertheless, the number of recorded malaria cases continued to increase steadily to reach 2.02 million in 1989, and then decrease to 1.78 million in 1990 (Bruce-Chwatt 1987, p276).¹⁰ The most recent estimate of malaria prevalence in India and the prognosis that has been made for the country's malaria situation represents a grim outlook (Sharma 1996).

Resurgence of Malaria in India

Several factors have been enumerated to be the cause of the sudden resurgence of malaria witnessed in India and in other parts of the globe beginning the late 1960s. The world-wide spread of vector resistance to DDT and Chloroquine¹¹ by the malaria parasite (especially *plasmodium falciparum*) was singled out as one of the most important factors (Payne 1987; Katz *et al.* 1982).

The WHO Technical Report concluded in 1970 that:

Resistance is probably the single biggest obstacle in the struggle against the vector borne disease, and is mainly responsible for preventing successful malaria

⁹ In 1972, the Global Eradication of Malaria Program was formally declared dead, and expert-bureaucrats had begun the postmortem assignments of blame (Desowitz 1991).

¹⁰ See Sharma (1996) for a current review of the problems associated with estimating the correct number of malaria cases in India.

¹¹ Despite talks of drug resistance, Chloroquine is still considered to be the least toxic and cheapest drug against malaria. It has fully maintained its efficacy and blood stages of *plasmodium vivax* and *P. ovale*, and its radical curative properties in quartan malaria (*P. malariae*) (Payne 1987).

eradication in many countries (WHO 1976, see also Packard 1986; Chapin and Wesserstrom 1983).

The causes of vector resistance to DDT and dieldrin and the continuing epidemic resurgence of malaria after the initial dramatic successes in control are still being debated¹²(cf. Cleaver 1977; Dutta and Dutt 1978; Dutta *et al.* 1979; Hyma and Ramesh 1980; Chapin and Wasserstorm 1981, 1983; Curtis 1983; Singh 1982; Sharma and Mehrotra 1982, 1982, 1983, 1986; Wessen 1986; Sharma 1987; Bruce-Chwatt 1987; WHO 1976, 1987, 1988; Clyde 1987). For instance, Desowitz recently concludes:

There is persuasive evidence that the antimalarial operations did not produce mosquito resistance to DDT. That crime, and in a very real sense it was a crime, can be laid to the intemperate and inappropriate use of DDT by farmers, especially cotton growers. They used the insecticide at levels that would accelerate, if not actually induce, the selection of a resistant population of mosquitoes...it was the intemperate use by agriculturist that caused the insecticides to spill over into the environment (Desowitz 1991; p214).

Two main issues that continue to be at the center of the resurgence debates, with reference to India in particular, are (a) the inappropriate and intensive agronomic use of insecticides as noted above, and (b) the neglect of urban malaria (as emphasized by Sharma and Malhotra 1986). However, according to Farid (1980), many countries that launched the biggest eradication programs (India in particular) failed because they did not apply the eradication measures with the needed epidemiological insights and the required efficiency. Similarly, Wessen (1986) too concluded that malaria eradication failed not because of the resistance factor primarily, but also because of the failure at the social and organizational levels - economic and logistic barriers - lack of a continuing political commitment to follow eradication protocols through the expensive and not immediately productive consolidation and maintenance phases. Arguably, a more important

determining factor might have been the dwindling financial support that came from international organizations as a result of their disillusionment with the whole eradication operation.¹³

Neglect of the Urban Malaria Problem in India

In India, until the late 1960s, malaria was predominately regarded as a rural disease. The component of urban malaria control was, therefore, not included in the initial planning of the national malaria eradication program. Cities and towns with a population of 40,000 and above were considered hypoendemic or malaria free zones. Malaria control in cities and towns was the responsibility of local authorities who were often ill-equipped, understaffed, inadequately financed and without the necessary expertise for vector control. Mosquito larvicidal oil was often scarce until the late 1960s (Sharma 1987). However, the NMEP noted that the incidence of malaria in urban areas was considerable. For instance, a malaria study in the state of Tamil Nadu¹⁴ in 1961, revealed that nearly 50% of the cases detected were from the urban areas and the proportion increased to 95% in 1963. Between 1964-1967, urban malaria accounted for about 80% of the cases in the state. In 1970, 88.7% of the cases recorded were from urban areas. Majority of the cases were indigenous, and even the 25-30% that were imported cases, were from other urban areas (Sharma and Mehrotra 1986; Hyma *et al.* 1983).¹⁵ The country's major cities, Delhi, Madras, Calcutta and Hyderabad had also started reporting an increasing number of malaria cases

¹² By 1976 resistance of insecticides had appeared in 42 species of *Anopheles* and this in turn had affected malaria control activities in 62 countries or areas inhabited by 260 million people (Bruce-Chawtt 1979).

¹³ From 1956 to 1969, the United States through the U.S. Agency for International Development (AID), gave \$790 million to the Global Eradication of Malaria Program. By 1969 it had become apparent that all that money and effort had gone down the drain, that the global eradication of malaria had been an impossible dream (Desowitz 1991 p214).

¹⁴ For an excellent historiographical analysis of the malaria situation in the Madras Presidency in the early decades of the twentieth century, see Muraleedharan, 1991; Muraleedharan V.R. and D. Veeraraghavan 1992.

each year.¹⁶ The NMEP evaluation committee - Madhok Committee (1969) - which reviewed the malaria problem in urban areas found for example that 10 urban areas in Andhra Pradesh and Tamil Nadu contributed 11.2% of the total malaria cases in the two states. Recommendations of the committee led to the introduction of the Urban Malaria Control Scheme in the NMEP in 1971 (Pattanayak *et al.* 1981). Yet, the number of cases reported from urban areas of India continued to increase from 3.4% in 1973, 3.9% in 1976, 9.8% in 1979 and 12% in 1982 (Bang and Shah 1988).

Major infrastructure development and large scale construction activities in Delhi and Calcutta, without synchronous larviciding operations, resulted in sudden increases in the incidence of malaria. Delhi for example recorded as many as 375,100 cases in 1978, when a large immigrant labor force came to participate in the extensive construction sites for the IX Asian Games that offered the most productive breeding sites for *A. stephensi*.¹⁷ In Calcutta, 26,000 cases were recorded in 1984 with an SPR of 34.49 per cent and API of 7.88 per cent, again because of an influx of migrant laborers who participated in the construction of the underground Metro railway. However, Bombay, despite its population density, recorded less than 5,000 cases per year for over 10 years, a success story resulting mainly from the stringent by-laws of the Bombay

¹⁵ The extent to which these figures could be an artifact of surveillance coverage and reporting patterns is open to question.

¹⁶ As will be discussed in some detail later in the chapter, Bombay was an exception to the situation. It was India's only major city that had achieved a good measure of success in controlling its malaria problem.

¹⁷ As noted earlier, *A. stephensi* is the principal urban malaria vector in India. Its breeding sites/places are well known. Among the permanent sites are: water storage tanks (cisterns) on the terraces of buildings, suction tanks, overhead water storage tanks in textile mills, railways, dock yards, wells, garden tanks, fountains, and water reservoir seepages. Among the temporary sites are leakages from cisterns and pipelines water storages and accumulations at building construction sites, roof gutters, scrap yards, rain water collection on terraces (Hyma *et al.* 1983; Deobhankar 1986). *A. Stephensi* has been found resistant to both DDT and BHC two potent insecticides (Sharma and Mehrotra 1986).

Municipal Corporation that ensured the closing of wells, mosquito-proofing wells, cisterns and overhead tanks (Deobhankar 1986; Bang and Shah 1988; see also Sharma *et al.* 1985; Pattanayak *et al.* 1977; Bruce-Chawtt 1979; Dhir 1969).

In the mid-70s, several outbreaks of malaria were also recorded in the urban centers of Andhra Pradesh, Maharashtra, Gujarat, and Rajasthan, and more recently in Panaji, Goa, attributed directly to construction activities and untreated breeding sites (Narasimham and Khaamre 1987; Khan *et al.* 1989). These states had begun to show a rapid increase in building construction and infrastructure development activities - mass housing complexes, bridges, etc. Accelerated population growth in several urban centers, coupled with massive construction activities in urban and peri-urban areas had increased the availability of breeding sites for malaria transmitting mosquitoes. Rapid urbanization had also begun to attract a high influx of migrant labor force from the nearby rural areas. In effect, not only did malaria flourish in urban areas but the seasonal movement of labor - many of whom were carriers of the malaria parasite facilitated the dissemination of infection even among the rural population as an uncorrected malaria transmission feedback loop.¹⁸

In effect, the emergence of an urban conglomeration as focal points for the dissemination of malaria to peripheral rural areas proved to be a major setback to the progress of NMEP. Efforts made toward permanent vector control and elimination of the reservoir of infection failed. In due course, despite the recognition of the importance of urban malaria, even two decades after the

¹⁸ As early as 1970, the In-Depth Committee Report had noted that an estimated 25% of the malaria cases detected in the urban areas were exported to rural areas before drug treatment could be completed.

introduction of the Modified Plan of Operations, the incidence of malaria in urban India has been on the increase. In this context, the dynamics that characteristically operate in urban domains and the manner in which they influence the pattern of malaria transmission need to be discussed in some detail.

Urbanization, Population Movements and Malaria Transmission

With accelerated urban population growth and population movement, it is anticipated that the incidence of malaria along with other vector-borne diseases in urban areas will also increase (Verhasselt 1985; Knudsen and Sloff 1992). Higher urban population densities in many ways allow for increased rates of transmission, while urban water storage practices and poor or nonexistent mechanisms for wastewater and refuse disposal create numerous breeding sites for vectors (Kendall *et al.* 1991). Many already infected new immigrants from rural areas constantly carry the malaria plasmodia with them, and thus provide fresh reservoirs of infection accessible to the urban malaria vector (Prothero 1986). Again, many immigrants who work part of the year in the city as wage laborers, especially as construction workers contract malaria at their work sites, return to rural areas (seasonal migration), infect others, or get infected again and return to urban areas, thus maintaining the transmission cycle.¹⁹ This problem of the transmission loop is further compounded by the rapid development activities - an important component of urbanization including new constructions, which provide additional breeding grounds for the malaria vector, while simultaneously attracting immigrant labor force.

¹⁹ This is not to suggest that migration is simply an "act." It must be understood as a process that involves a series of acts anticipated, planned and expressed - it is not simply an act performed (du Toit 1990).

Lack of adequate housing facilities produces a change in urban environment characterized by the proliferation of squatter settlement and the development of slum conditions. Many migrants who move into the city are initially forced to live in slums and other squatter settlements. These settlements are collections of temporary housing units, unauthorized and set up on any available space, very often on water-logged low lying areas or marginal land, combined with lack of piped water supply or insufficient maintenance of existing services. Such settlements create favorable conditions for the proliferations of the malaria mosquito. The makeshift housing offers little protection against man-mosquito contact, and leads to greater exposure of its inhabitants to mosquito bites, thus enhancing malaria transmission.

Furthermore, in rapidly expanding urban areas there is a mixing of people originating from different geographical regions of the country, all with different levels of immunity to malaria, depending on their previous exposure status. This variability of immunity level has important consequences for the clinical courses of malaria infections in the urban areas.

There are other aspects pertinent to malaria transmission in urban areas as well - some have a characteristic economic and commercial element, while others have a behavioral component. For example, in urban India people have started adopting a series of commercially available measures for self-protection from mosquitoes and malaria - fumigant (allethrin) mats, smoke coils, topically applied repellent compounds and pyrethrum aerosol sprays. Not known is the extent to which these commercial mosquito repellents and "technical fixes" truly afford the necessary level of protection to users, and the ways in which they have altered the ethnomedical behavior of those

who live in malaria endemic areas (Ansari *et al.* 1990; Curtis 1986; Sharma *et al.* 1986). Also unclear is how this rapid socio-cultural transformation aided by “modern technology” has influenced peoples' notions of vulnerability and risks, making the mosquito and malaria menace an individualized problem rather than a community concern. The increasing heterogeneity and rapidly changing configurations of communities/neighborhoods in urban areas in addition contributes to urban dwellers experiencing a sense of loss of control over their immediate environment. In this context, the ramifications of poor community participation on the increase in the incidence and prevalence of malaria in urban areas have not been adequately explored.

Diagnosis and Treatment of Malaria in Urban India

The diagnosis and treatment aspect of malaria also play an important role in determining the levels at which malaria transmission in urban areas is maintained. Low income concentrations in urban India, especially slums, are poorly served by the public health sector. Residents of such localities find access to the private health sector expensive. Many people who contract malaria remain either undiagnosed and/or untreated, while others who decide to self-medicate for economic reasons, might take antimalarials in suboptimal dosages. This has important consequences in enhancing drug resistance.

Several misconceptions about what causes malaria and how it is transmitted are also prevalent in certain population groups living in urban areas. For instance, while the mosquito may feature prominently in people's explanatory models about the etiology of malaria, they also believe that polluted air, drinking contaminated water, accumulated garbage that attracts mosquitoes and flies,

or even getting wet in the rain as a precipitating factor for contracting malaria. Furthermore, nosological fusion, which results from people's inability to distinguish what are, biomedically, two or more discretely labeled diseases, can affect their assessments of the efficacy of measures they take to prevent and treat an illness episode. For instance, in malaria endemic areas, all febrile illnesses may be labeled as "malaria" or its equivalent in the local illness taxonomy. An episode of fever with shivering, that may biomedically be labeled as a case of UTI or "typhoid," may be erroneously labeled by the affected person and family members as "malaria" and the efficacy of the preventive measures - chemoprophylaxis or impregnated bed nets is brought into doubt. Similarly, if an illness episode is attributed to malaria which biomedically is not malaria and the person does not get better after taking antimalarials, he or she may conclude that this medication is not efficacious. Again, if a self-limited viral syndrome is attributed to malaria and the person takes a local remedy which scientifically is not efficacious against malaria, the person may conclude that it is efficacious against malaria when the illness episode subsequently resolves spontaneously (CMPC 1990).

Differential labeling of febrile illness and misdiagnosis and inappropriate treatments of febrile illness by medical practitioners are recognized as important causes for an increase in antimalarial drug resistance (CMPC 1990; Reed *et al.* 1992).²⁰ Private practitioners (qualified and "quacks") who have proliferated in urban India treat most of the "malaria" patients. Their prescriptions vary greatly, and the line of treatment chosen lacks concordance with the biomedically defined dosage levels and schedule, but addresses patient demands and microeconomics. According to Foster:

²⁰ Worldwide, most malaria is diagnosed and treated without the benefit of a microscope, let alone recombinant DNA technology (Bassett *et al.* 1991; p65).

Overprescription is a major problem...many [prescribers] prescribe a large number of drugs in the expectation that the patient will think they are 'good doctors'... Patients...may expect a long prescription to validate their 'sick role'; yet they rarely fill a long prescription. If they are unable to decide which of the numerous medications is the one he really needs, he may ask the person behind the counter at the pharmacy, who is in fact the one who 'prescribes', usually on the basis of what the patient says he can afford (Foster 1992; p129).

Private medical practitioners rarely forward information on the cases they treat to local municipal health authorities, who are constantly in need of accurate public health intelligence. The proliferation of private medical practitioners, and private pharmacies in urban India and the increase in the number of people engaging in inappropriate treatment including self-medication is considered a notable factor in antimalarial drug resistance. Possible linkages between the use of private medical practitioners, self-medication and antimalarial drug resistance have been raised by a few researchers (Foster 1992). Researchers have argued that all these above factors have significantly influenced the resurgence of urban malaria.

Given the complexity of the malaria situation in urban India, the two cities - Bombay (*Mumbai*) and New Bombay (*Navi Mumbai*) offer the ideal conditions and the context in which to examine the issue of resurgent malaria in urban areas, from the point of view of how it is indigenously interpreted and dealt with at various levels. As noted earlier, for historic reasons, Bombay had stood until recently, as an exemplar for successful urban malaria control. Nevertheless, for whatever reasons, the city recently witnessed a resurgence of malaria in a major way beginning 1992, with the trend worsening over the years. New Bombay, a nascent city across the Bombay harbor, also experienced a worsening malaria situation during the same period, with a greater intensity as compared to Bombay (see data in next section). To put the current malaria situation

obtaining in these two neighboring cities into perspective, a brief historical overview of public health in the two cities has been sketched in the following section.

A Brief History of Malaria in Bombay and New Bombay

Bombay

Bombay (*Mumbai*) is the capital of Maharashtra state and is on the West coast of India.²¹ Popularly known as the Gateway of India, it is the nation's principal port, its economic hub and commercial and financial center. Bombay Island²² has an area of 68.71 square Kms. The Metropolitan area (Greater Bombay) which includes suburban areas has an area of 603 square Kms. It is one of the largest and most densely populated cities in the world (Pop. 12,571,720 in 1991). For administrative purposes, the Municipal Corporation of Greater Bombay (MCGB) has divided the city into 27 administrative wards. Bombay has been portrayed as metaphor for modern India (Patel and Thorner 1995), but in its present configuration, it also stands for an archetype of social segregation, homogenization of elite areas, disparities in landscape and lifestyles. While it is home to some of the country's wealthiest people, approximately 4.1% of the city's land is occupied by the 50% of the population who are slum dwellers, many of whom live a sub-human existence. The city's average density is 16,432 per square Km. Bombay continues to be a city of male migrants, and demographic pressure on the city has been tremendous. Some parts of the inner city have nearly half a million persons per square Km - perhaps

²¹ The climate in Bombay is hot and humid most of the year. The mean temperature varies from 91° F (33° C) in May to 67° F (19° C) in January. The average temperature is 85° F (29° C). The coolest season is from December-Feb, with January being the coolest month with an average temperature of - 75° F (24° C). The rainy season, brought by monsoon winds from the South-West, lasts from June to September and is followed by the post monsoon season, lasting through October and November, when the weather is again hot. The city gets an average of 125 inches (3,175 cm) of rainfall yearly.

²² The Bombay Island was originally built on a group of seven islets connected by reclamation projects, construction of causeways, railroad embankments and breakwaters. During the early 1970s, in an effort to relieve congestion, the Salset Island (the suburbs) was linked with the mainland by a bridge across Thana Creek, the headwaters of Bombay harbor.

the world's highest density. The unprecedented construction boom witnessed by the city in the recent years reveals the vested interest of the commercial bourgeoisie and the international capital in helping to develop Bombay as a stable and lucrative base for market penetration (Ramasubban and Crook 1995).

Bombay's early social and political history has been documented by several researchers (cf. Harris 1978; Tindall 1982; Kooiman 1985; Kosambi 1985; 1986; Klein 1986; Dossal 1991; Chandavarkar 1994; Patel and Thorner 1995; Ramasubban and Crook 1995). According to most contemporary researchers, Bombay was a sparsely populated cluster of seven islands that was more notable for its pestilential swamps than its commercial value. In 1661, Britain acquired Bombay from the Portuguese as part of Charles II's dowry on his marriage with Catherine of Braganza. Eight years later, it was transferred as a worthless possession to the East Indian Company by the Crown, and its status remained largely unchanged for nearly a century and a half. By 1872, as a result of several factors, in particular the "cotton export boom" that resulted from the American Civil War of the 1860s, Bombay had become the second city of the Empire. By 1900, it had emerged as a major commercial and industrial metropolis, and its importance as an administrative and political capital was also growing (Chandavarkar 1994). However, as Klein (1986) has pointed out, Bombay's commercial growth and prosperity during the late nineteenth and early twentieth century did not flow down to the masses, nor did it improve the quality of existence or material conditions of the ordinary populace.²³ Rather, it caused a great quantitative expansion in the working class, incredible congestion and environmental contamination. Alongside

²³ Death rates among low-class Indians in Bombay were always significantly higher than those of elite groups, multiplied disastrously when epidemics were rife, while mortality among elites only rose moderately (Klein 1973).

the enormous growth of the city, toward the end of the nineteenth century, its inhabitants, who were mostly migrants, were a witness to one of the worst catastrophes as far as the city's history of public health was concerned - an outbreak of bubonic plague in 1896.²⁴ The epidemic represented the apocalypse which the city's municipal officials had long feared. As mortality rose, the city was consumed by a widespread moral panic, which was reflected in the frenzied measures adopted to combat the disease in Bombay and in neighboring Pune (Chandavarkar 1994; Harrison 1994; Klein 1988; Arnold 1987). The panic exodus from the city that the authorities had wanted to guard against occurred (Arnold 1987). In response to the plague situation, the Government of Bombay created the City Improvement Trust in 1886, with autonomy from the Municipal Corporation (established in 1865). But as the threat of the plague receded, so its efforts were diverted from sanitation and housing to the traditional objective of strengthening and improving the commercial infrastructure of the city (Chandavarkar 1994). While plague had called the attention of the Colonial Government to the city's predicament, the heavy ongoing toll of mortality from other diseases could not be forgotten (Ramasubban and Crook 1995).

It was against the background of these dramatic events at the turn of the nineteenth century that the Bombay Municipal Corporation took measures that were to eventually help it in controlling the spread of malaria in the city for several decades to come.²⁵ However, despite some initial measures, in 1908 the disease broke out in the city with increased severity, and the situation

²⁴ After plague broke out in Bombay city in 1896, its spread was facilitated by the famine conditions which prevailed in large parts of India during much of the next five years (Klein 1973; Ramasubban and Crook 1995).

²⁵ At one time, J.A. Turner, health officer of Bombay, had boasted that his was the first city in the world where an attempt to combat malaria according to modern knowledge had been made. His plan of attack consisted of general sanitary improvements, drainage, leveling of ground, filling-in of ditches, cleaning of wells, and mosquito extermination (Harrison 1994, p160).

caused a considerable outcry (Bentley 1911). After the failed initial measures were rectified, the Bombay Municipal Corporation succeeded in bringing the malaria problem in the city under control within a few years following Bentley's seminal work on the subject. Bentley's (1911) spleen census brought to light a startling fact, namely, the comparative freedom of the whole of north of the island from any serious amount of malaria. This he noted was contrary to what had been supposed for hundreds of years - that the ill-drained, low lying areas in the Center and North of Bombay, were more malarious than the older portions of the City on the higher land to the South. Another fallacy regarding Bombay's malaria that Bentley brought to light was the commonly accepted suggestion that much of the malaria in the City was due to the importation of the disease and that this source of infection was so common as to render it exceedingly doubtful if measures taken to prevent the breeding of malaria-carrying anopheles would be of much effect (Bentley 1911).

Bentley's survey of 1909-1911, gave way to the setting up of a Special Malaria Department for Bombay City. Measures were taken toward the prevention of *A. stephensi* breeding particularly in uncovered wells and cisterns. These measures were so successful in diminishing the incidence of malaria in the city, that the local authorities decided to take it easy, and in 1918 the Malaria Department was disbanded. The incidence of malaria began to increase again, and in 1923, the Malaria Department was reconstituted and much of the work previously accomplished had to be done all over again. A Central Malaria Committee was appointed and the staff increased, but malaria continued to be a serious problem. A fresh spleen survey of the whole island was commissioned and carried out by Covell in 1928. The recommendations put forward were

directed solely towards the prevention of mosquito breeding, and were implemented with excellent results (Covell 1955).

Covell zealously augmented the findings of Bentley's 1909-1911 spleen survey, in his report "Malaria in Bombay - 1928." Besides meticulously documenting the legislative measures required to control the spread of malaria in Bombay, he made important observations that were to have long lasting implications. He observed:

There is no natural malaria in Bombay, the chief reason being the absence of natural streams. *Anopheles Stephensi* is the only species of mosquito which plays any appreciable part in the transmission of the disease in the island, and its breeding places are exclusively man-made...This mosquito is the one malaria carrying Anopheline in India which is able to adapt itself to life in a large city. In the case of other carriers facilities for breeding suitable to their needs are not produced in urban areas. But *A. Stephensi* is the great well and cistern-breeder of India, and unless these breeding places and others of a similar nature are rendered permanently mosquito proof it will continue to flourish even in the heart of the City (Covell 1928:34-35).

The by-laws made in the early years following Bentley's report of an investigation into the cause of malaria in Bombay and the measures necessary for its control, further augmented by Covell (1928), served the Bombay Municipal Corporation well for several years, to keep the spread of the disease under control, except during war emergencies.²⁶ For instance, localized focal outbreaks occurred in the city in 1963 and 1965, when many of the closed wells were opened up as war emergency measure, leading to prolific breeding of *A. Stephensi*. Transmission stopped soon after the wells were closed and sealed again (Pattanayak *et al.* 1981). Until recently, malaria had

²⁶ It may be noted that Bombay city was part of the Bombay Presidency under the British rule, later to be called the Bombay State, and after the reorganization of the states, as Maharashtra in and after 1960. In 1942, the Malaria Organization was created in the State of Bombay. This organization which began experimental trials of using DDT in the Kanara District which has earned an unenviable reputation for the greatest prevalence of malaria in the State, was eventually expected to extend its activities throughout the State of Bombay (Rao 1950).

almost become a “forgotten disease” in Bombay. The first signs of its resurgence emerged in 1992 when the MCGB's malaria surveillance data revealed a significant increase in the number of malaria cases - from 5,335 cases in 1991, to 11,878 in 1992. The figure jumped to 25,171 in 1993, 21,408 in 1994 and 24,074 in 1995. Of the 24,074 cases recorded in 1995, 14,147 were “indigenous” and the remaining 5,901 cases were “imported.” These figures represented only the tip of the iceberg, as they did not account for the manifold number of “fever” cases that went unreported or undiagnosed, or diagnosed and treated by private medical practitioners, pharmacists, etc. In addition, because the municipal surveillance activities tend to get confined to low income localities, the middle and high income localities invariably get precluded from the surveillance for socio-cultural reasons. The reasons for the current “resurgence” and magnitude of malaria in Bombay and the related issue of “drug resistance” are being examined and debated from different perspectives (Garg *et al.* 1995; Sorabjee 1996).

Clearly, if Bombay has been for many decades an exemplar of how malaria in urban areas should be controlled, New Bombay offers an example of exactly the opposite - how it should not be done, or alternatively, how a new city or township should not be designed and developed without making adequate provisions for malaria control, and an adequate health infrastructure.

New Bombay²⁷

New Bombay (*Navi Mumbai*), known as the “second city” located across the Bombay harbor, is a State project, promoted by the Government of Maharashtra. It was originally designed in 1971

²⁷ The little documented information on the natural and social history of what is now New Bombay pertains to the Thana and Raigarh districts and the Konkan region.

and developed by the City and Industrial Development Corporation (CIDCO) a planning organization formed specifically for developing the new city. The intention behind developing New Bombay was to decongest and redirect the population from an already overpopulated Bombay (Banerjee-Guha 1995). At the time of the planning process, it was envisaged that the new city would be self-contained and more or less independent of Bombay. The Chairman of CIDCO had reiterated the aim of developing New Bombay as a 'basically self-contained city.' The justification for developing the second city was not to provide a means for the old city to grow, but to only redistribute the expected population increase in the entire Metropolitan Region between old and new cities thus reducing the 'population pressure' on the old city without any net addition to the Region's population (Harris 1978). As things stand, New Bombay covers an area of 343.70 square Kms spread over two districts - Thana and Raigarh. The net area of the project which includes 95 villages, a big industrial area, as also huge areas of agricultural, marshy and barren land, is 294 square Kms of which 166 square Kms (57%) is private land, 27 square Kms (9%) of salt pan land, and 101 square Kms (34%) government land. The Navi Mumbai Municipal Corporation (NMMC) that was set up in 1992, has administrative jurisdiction over an area of 175 square Kms, comprising planned nodes (townships), villages and slums.²⁸ When the nodes were planned, each node was expected in the ultimate stage of development to become independent and self-sufficient, with a strong economic base. However, from 1973 to 1993, only seven of the originally planned 20 nodes were actually developed. Instead of balanced development among the nodes, the Vashi node - the location most favored by business interests because of its physical

²⁸ Approximately 50% of the people of NMMC's New Bombay area live in planned townships (nodes), 30% in villages and 20% in slums.

proximity to Bombay - has emerged as the affluent core of New Bombay.^{29 30} To a large degree, New Bombay has functioned as a satellite center for the financial and industrial capital of Bombay and as a dormitory suburb (Banerjee-Guha 1995). The extent to which New Bombay has actually counterpoised the congestion of Bombay or has indeed intensified the congestion in Bombay is up for discussion and debate.

Following the sanctioning of the New Bombay plan, CIDCO acquired all their agricultural land and salt pan land of the native inhabitants under the land acquisition act - 1894, and in effect gradually blocked their access to the sea and other resources. Cash compensation was paid to those whose land was acquired. The process of land acquisition was met with resistance by the local villages and several peoples action groups emerged sporadically. However, much of their focus was on demand for higher compensation for land or employment for men. In spite of attempts having been made by CIDCO to rehabilitate the project affected people,³¹ the efforts have been largely inadequate. They lost access to all resources of work and in the post development period no viable alternative emerged for them. The construction industry in New Bombay provided alternative employment. However, native women from the villages were not

²⁹ Banerjee-Guha's survey of New Bombay in 1989 revealed that 64 per cent of medical stores, 68 per cent of hospitals and nursing homes (all private), 74 per cent of doctors, 60 per cent of hotels and restaurants, 63 per cent of banks, 60 per cent of commercial institutions and 55 per cent of schools in New Bombay were located in Vashi (Banerjee-Guha 1989 p159-188).

³⁰ The backwaters (*khadi*) of the Arabian sea divide Bombay's peripheral land (the M (E) ward) from the mainland on which New Bombay is located. Two one mile-long road bridges connect Bombay and New Bombay. In 1992, a rail link (Mankhurd-Belapur section) was constructed, accelerating the population mobility between Bombay and New Bombay on the mainland.

³¹ Before the taking over of their farm lands by CIDCO, many original inhabitants were engaged in fishing (the *kolis*) and salt making (the *agris*). Most of them continue to reside in their original villages. *Agris* are primarily salt makers and known for their skill in tilling salt. *Kolis* by tradition are fishermen. Women in the native villages actively shared the burden of work. While fishing was predominantly a male activity, women shouldered the entire responsibility of trading. Much of the task related to salt making and cultivation was also done by women.

used to such work and they did not possess the necessary skills. Preference of men for industry jobs further confined women to the margins of labor market. Women from poor households were forced to take up work as petty traders, casual laborers, rag pickers, construction workers, etc to fight the risk of indigence. The indigenous population has been pushed to the periphery both culturally - by displacement from their old settlement, and economically - by acquisition of their cultivable land. Many displaced families could not even find shelter in the sites and services projects earmarked from them (Banerjee-Guha 1991).

In any event, the New Bombay of today presents a very peculiar topographical scenario considering the fact that several traditional villages coexist alongside a dense industrial belt (locally known as the Thane-Belapur industrial belt), slums, and modern townships. The settlement pattern primarily reflects the working class - the middle and the poor classes. Overall, the city's environment is marked by tremendous pollution from the hundreds of chemical factories that dot the industrial zone. The landscape is characterized on the one hand by stone quarry areas at the base of the mountains, with sprawling slums in their vicinity (especially in Turbhe ward), and on the other hand, neatly divided settlement sectors with garden spaces, designer housing complexes (e.g. the NRI Colony), office buildings, commercial and shopping complexes, hovercraft jetties and ultra-modern railway stations, that jostle alongside traditional villages recently marked by beer bars and night clubs. The multicultural "community" in New Bombay is relatively nascent, and CIDCO's efforts to usher in a community spirit in the local populace through the setting up of community halls, has shown moderate results.

Public health facilities in New Bombay are few. The city does not have a single public hospital. An overwhelming majority of the people seek medical care from the private health sector. While there are over 20,000 registered medical practitioners in Bombay for a population of over 12 million, in New Bombay there are 249 registered medical practitioners for a population of 600,000 (Bhatia and Garg 1994; Nandaraj 1994). The most recent baseline health survey commissioned by the Navi Mumbai Municipal Corporation, covering a sample of slums and villages within its administrative boundary, revealed that "malaria" accounted for 86 per cent of all morbidity (Bhatia and Garg 1994).

As far as the malaria control in New Bombay is concerned, the approach is quite different from Bombay. While the Bombay Municipal Corporation adopts a two pronged strategy against malaria - with the active collaboration of the pest control/insecticides department and the malaria surveillance department, backed by stringent by-laws aimed at preventing productive breeding sites for *A. stephensi*, in New Bombay, antimalarial measures such as active and passive surveillance, fogging and larviciding with various oils, are implemented by the Government of Maharashtra under the National Malaria Control Program in coordination with the City and Industrial Development Corporation (CIDCO), and by the Navi Mumbai Municipal Corporation (NMMC) through its multipurpose workers. The Government and the NMMC have divided between them, administrative areas such as slums, villages and nodal areas for surveillance work. However, despite the division of boundaries for surveillance between the two organizations, in certain areas, there is either an overlap or neglect of surveillance activities. Not surprisingly, the people of New Bombay often find it difficult to make a distinction between municipal workers and

the malaria surveillance workers operating under the government's malaria control program. Until recently, since the NMMC did not have a set up of its own, it had contracted out the larviciding operations to a private pest control organization known as "Kalpataru," but has recently received an approval from the Government of India for an Urban Malaria Scheme.

The New Bombay surveillance system recorded 4791 cases in 1992, 5656 cases in 1993, 4436 in 1994 and over 1,800 cases in the first half of 1995.³² According to the surveillance records, the proportion of *falciparum* infections in New Bombay greatly outnumber those recorded in Bombay. What has alarmed public health officials both in Bombay and New Bombay is not just the enormous increase in the number of cases alone, but the number of reported deaths due to malaria, from isolated instances in the early 1990s to approximately 170 confirmed cases of death due to malaria in 1995. It was in this context of dramatic changes in the malaria situation in Bombay and New Bombay that the present study was undertaken with a practical concern - to inform and augment the existing malaria control strategies in Bombay and New Bombay by documenting the behavioral patterns related to the social epidemiology of malaria and to possibly design intervention programs that are both effective and culturally acceptable (Brown *et al.* 1996).

Research Questions

Considering the above discussion, the following were some of the pertinent research questions that the present study addressed.

³² As in the case of Bombay, these figures reveal only a tiny margin of the malaria prevalence in New Bombay, and the majority of "fever" and "malaria" cases are treated by private practitioners.

- Do lay persons associate malaria with mosquitoes or do they have alternative explanatory models about how malaria is caused and transmitted?
- Do people who live in slums, villages, planned townships, high-income neighborhoods respond to malaria in similar or different ways at the individual, household and the community/ neighborhood level?
- In what ways do social class factors (e.g. residential locale, education and income) influence the ways people interpret and respond to malaria?
- Do people who live in high and middle-income localities (planned townships - nodes) blame slum dwellers, villagers for the persistence of malaria in their own adjacent locality?
- Do the original inhabitants of a community blame recent migrants as being responsible for "bringing" malaria and "spreading" in their locale?
- How much money do people in urban areas spend on treatment of malaria?
- In what ways does an episode of malaria affect the reallocation of household resources?
- In what ways do past experiences with malaria influence the households response to a fresh episode of malaria, or the measures taken to prevent being afflicted with the illness?
- In what ways does an episode of malaria disrupt the everyday life of a family?
- How much suffering does it entail at the individual and family level?
- Is it likely that, because the urban poor have limited access to commercially made available anti-mosquito measures and antimalarials, the scope for community participation in malaria programs will be greater in slum localities and villages than in middle-income localities where people have better access?

- What factors prompt some people to seek help from private medical practitioners as against the government or municipal services in the event of an attack of malaria, and why?
- What is the attitude of local people towards the health authorities entrusted with the responsibility of community health inclusive of antimalarial measures?

RESEARCH OBJECTIVES

The broad objective of this study was to conduct a comparative ethnographic analysis of the local response to malaria and suspected malaria in two malaria endemic geographical domains marked by (a) highly differentiated population configurations and (b) strikingly different health systems network which have evolved at different points in time. Within this broad objective it was proposed to examine from an ethnographic perspective how people who live in slum localities, villages, middle-class townships, and high-income neighborhoods actually respond to malaria at the individual, household and community level. In doing so, the study aimed to identify factors contributing to persistence of malaria in urban areas. The study also aimed to analyze the dynamics of health-care decision-making pertaining to malaria and suspected malaria, at the individual and household level, involving self-medication and seeking of treatment from different sources - government, municipal health personnel and private medical practitioners. Another broad goal of this study was to explore the scope of community participation and consumer education and health education endeavors in urban malaria programs. At issue was whether the marked increase in the availability of commercially manufactured anti-mosquito repellents and antimalarials has "individualized" the malaria problem and in effect narrowed down the scope of community participation in urban antimalaria programs. Finally, this study also aimed to document

the role played by the government health system and private medical practitioners and institutions in the prevention and treatment of malaria. Given the need to understand the situation, and to develop appropriate intervention strategies to mitigate the problems of those afflicted with malaria, the study was carried out keeping in view the following specific objectives:

1. To document whether and how people living in slums, villages and planned townships in urban areas perceive and differentiate malaria from other forms of illness complicated by 'fever'.
2. To identify local health concerns regarding vulnerability (fears about the consequences of contracting malaria) of certain segments of the population (e.g., infants, children, pregnant women) to malaria and to compare responses in slum localities, villages and planned townships where malaria is endemic.
3. To ascertain the measures taken by local people for preventing malaria at the household level, and to compare the perceived efficacy of individual, household and community-based/local municipal health authorities initiated antimalaria control measures in each locale.
4. To ascertain the attitude of local people toward government health functionaries engaged in anti-malaria activities (prevention and treatment).
5. To document illness stories/narratives of people who have experienced an episode of malaria in order to elicit information on the suffering and disruption in everyday life that the illness has brought about, frustrations experienced, coping strategies adopted, and social support network used to deal with the problem.
6. To observe how patients present symptoms of malaria or suspected malaria to private medical practitioners and how private practitioners diagnose, advise and give treatment to these patients.

7. To ascertain the health expenditures incurred by people from different socio-economic classes in the treatment of malaria, and to document the manner in which family members mobilize resources, reallocate household resources to deal with an episode of malaria in the family.
8. To explore the scope of community participation at various levels in antimalarial programs in slums, villages and planned townships in urban areas.

The report has been presented in six chapters including this introductory chapter. Chapter II discusses the methodology adopted for the conduct of the study, and Chapter III profiles the demographic and socioeconomic background of the study population. In Chapter IV, the central theme of the study is discussed, namely, lay people's interpretation and response to malaria. Chapter V highlights the role of private medical practitioners and private pharmacies in malaria and emphasizes the interface between private health sector and lay persons affected with malaria. Chapter VI concludes the report with a discussion on the main findings of the study and their ramifications for urban malaria control. Instruments used for gathering different sets of data have been included in the appendix section.

CHAPTER II

METHODOLOGY

Research Setting

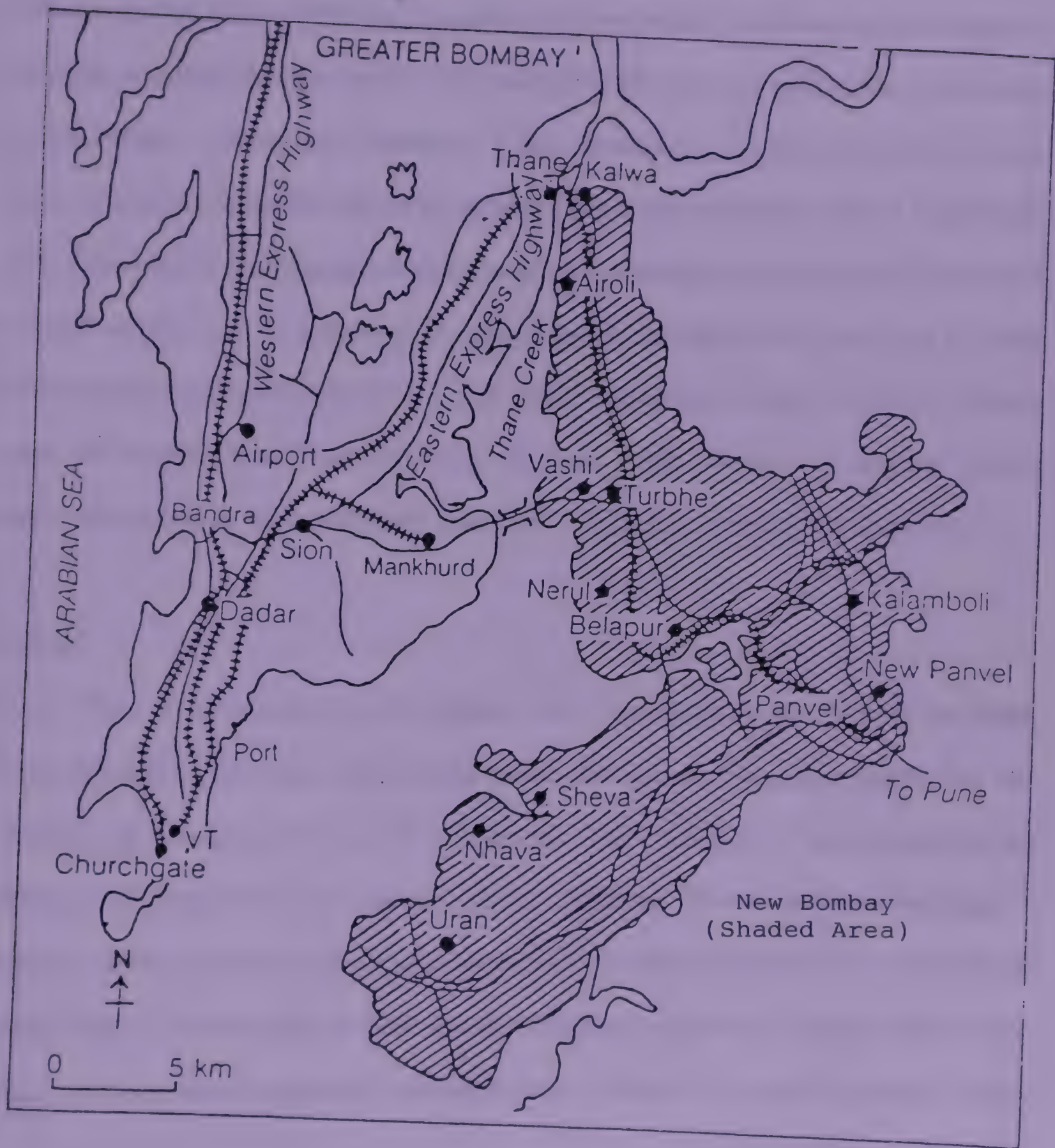
This study was conducted in Bombay and New Bombay with a comparative perspective. The malaria situation in these two cities was compared to draw out similarities and differences and the trends underlying the situation. The rationale for making a comparison was to find out how people who live in very different socio-spatial configurations interpret and respond to malaria at a time when the environment and socio-economic realities were rapidly changing. The malaria situation in Bombay, a city of 12 million people was compared with New Bombay, a “new” city of 600,000, because for several decades Bombay had stood up as an exemplar for how urban malaria could be successfully kept under control even in the face of very high population densities and a rapidly changing landscape. Yet, for whatever reasons, the scenario had changed, and malaria had reemerged as a major health problem in the city. The Municipal Corporation of Greater Bombay (MCGB) had recently acknowledged this fact, much to its consternation and that of the public.

At issue was - what had gone wrong with the city’s anti-malaria operations, although the MCGB had at its disposal a well-coordinated malaria surveillance and pest control machinery, laboratory facilities, a massive municipal work force, and a wide network of public and private health facilities? What was it that had given way to malaria for it to reemerge as a major public health problem - all in a matter of four years after having been kept under control for several decades? Was the problem of malaria resurgence in Bombay in any way “unique” to the city or was it going along with the trend in other urban centers in the country? Did Bombay’s successes and failures

with controlling the problem have any lessons to offer to a new and budding city like New Bombay, with a nascent municipality (established in 1992) and an abysmally poor health infrastructure and manpower, and confronted with an enormous malaria problem? Stated otherwise, the question was whether New Bombay had any lessons to learn from Bombay's experience with malaria to preempt an impending "cataclysm" or was it that this new city had its unique characteristics and problems of its own that were unparalleled with those of Bombay? Using these broad questions as contextual to the research framework, the central issue was to make a cultural analysis of the interpretations and responses of the people who live in two different geographical domains toward malaria and draw out inferences that will have implications for urban malaria control programs in general.

To facilitate the comparative perspective, different sets of data were collected in a variety of locales in eight municipal administrative wards - four each in Bombay and New Bombay (see map). These municipal wards were selected on the basis of their "endemic" status as purported by the local health authorities using data on malaria incidence rates (number of cases), vector potential (actual identification of permanent and temporary breeding sites), and vector detection. Nevertheless, within each of the eight municipal wards, there was considerable variation in the profile of the neighborhoods. Data were collected only from certain select neighborhoods and apartment blocks within each municipal ward, that were considered "notorious" for malaria cases by the municipal authorities.. A brief description of the eight locales is given below.

Map of Bombay and New Bombay



Bombay Setting

A Ward

A Ward is the hub house of Bombay, comprising business houses, traditional and plush high-rise apartment, popularly known as the Fort area, and the reclaimed portion as Back Bay Reclamation or Cuff Parade - "Manhattan of Bombay."¹ Tall skyscrapers are juxtaposed with slums and traditional fishing villages. The MCGB has its head office in this administrative Ward. Data for the study were collected from a sample of residents of a large building complex in Colaba, which had recorded several cases of malaria, and scattered locales in Cuff Parade. This ward has been historically malarious (cf. Bentley 1911; Covell 1928). The existence of the Navy Docks, Railway yards, the Bombay Port Trust complexes, uncovered wells, cisterns, and ongoing massive construction activities, has contributed a great deal to the profuse breeding of *A. Stephensi*.

D Ward

The D Ward is best known for the Malabar Hill (a promontory), and Nepean Sea Road, Chowpatty Beach, Banganga, and adjoining locales that epitomize Bombay's wealth. This area overlooks the Chowpatty beach on the Arabian sea. The consistency of plush bungalows and buildings is interrupted by slum pockets, and old dilapidated *chawls* (traditional buildings). A portion of D Ward comprises Bombay's "middle-class." As with the A Ward, the D Ward also has a long history of malaria (Bentley 1911; Covell 1928), mainly attributed to leaking water storage tanks, and innumerable cisterns and decorative water fountains at various intersections, garden

¹See Dossal (1991) for a historical representation of the developments that took place in this part of Bombay between the years 1945 and 1875 - during the "cotton export boom." See also Ramasubban and Crook 1995 for a recent review of demographic changes in this ward over the last 100 years.

apartments and penthouses. Data for the study were collected from a sample of residents of two large building complexes (Government of India's Officers Quarters) in Pedder Road and Nepean Sea Road, and scattered apartments in Walkeshwar area.

F- South Ward

This municipal ward is better known as Lower Parel, or "mill area," because of the many textile mills, that dot the landscape - a few of which have closed down following the historically significant textile workers strike in 1982 (Kooiman 1989; Ramasubban and Crook 1995).² The majority of the residents of Lower Parel belong to the lower and middle income group, and live in traditional houses, *chawls* and B.D.D. *Chawls*. The ward is well known for its cluster of teaching hospitals (King Edward Memorial Hospital), and the Tata Memorial (Cancer) Hospital, and the world renowned Haffkins Institute. The history of malaria in Lower Parel and Sewri area is legend - a cause directly attributed to the numerous textile mills and their water storage practices. Data for the study were collected from a sample of residents in the BEST colony, Municipal Chawls, Ambewadi, and others who were scattered in different locales around the Sewri Cross Road.

L/N- Ward (Chandivali Quarry Area)

Traditionally a stone quarrying area, this patch of land in suburban Bombay is inhabited by a few thousand quarry workers and their families. Most of the residents work in 13 quarrying and stone

² The textile strike of 1982, was the longest in history. It failed to save the textile mill industry from extensive closure, and resulted in the loss of some 100,000 jobs since Independence. The strike's immediate result was, undoubtedly, social hardship, even though many migrant mill workers returned to their village homes (Ramasubban and Crook 1995, p165). See also Chandavarkar (1994) for an excellent review of the political history of the Parel area between 1900 and 1940.

crushing companies. Malaria was "unheard of" in this pocket till the early 1990s. The development of massive modern townships alongside the Powai Lake, better known as Hiranadani Complex and MHADA Complex, resulted in the profusion of mosquitogenic conditions ideal for *A. stephensi* breeding. Thousands of migrant laborers who came to work as construction workers, brought with them different strains of the malaria parasites, thus "seeding" the malaria transmission cycle. The victims of this development were the apparently immune quarry workers. Data for the study were collected from a sample of residents - all from the Chandivali quarry area.

New Bombay Setting³

Belapur

This node was originally developed as the Central Business District. Consistent with New Bombay's topography, this "concrete jungle" has been developed in the midst of a few traditional villages. The township is divided in several sectors, with rows of well-planned apartment block on the one side, and corporate offices on the other side. There are no slums that are obvious, but a few deprived people live in huts near the Belapur Railway Station. The head office of the Navi Mumbai Municipal Corporation (NMMC) is located in this area along with several other government offices. Data for the study were collected from a sample of residents of Belapur village, and pockets of slums around the Primary Health Center (PHC), and from the residents of the nodal or sector areas. The persistence of malaria in Belapur is attributed to the innumerable

³ The present study covered only those areas that were under the administrative jurisdiction of the NMMC. See Harris (1978) for a study of the early phases in the development of New Bombay and Banerjee-Guha (1991; 1995) for a more current analysis of the state of affairs in New Bombay.

untreated mosquito breeding sites created because of the on-going landscape infrastructure development activities.

Nerul

This Ward has been developed along the Bombay-Pune national highway, adjoining the Thane-Belapur Industrial Estate. Nerul is, however, a purely residential area. Traditional villages inhabited by the *kolis* and *aagris* are now surrounded from all four sides by modern housing complexes, most of which have been developed by CIDCO. The Nerul Ward is divided into three phases, with each phase comprising several sectors. Across the highway is the local slum known as Shivaji Nagar. As with the Belapur Ward, massive housing complexes have provided the malaria vector with numerous untreated breeding sites. Data for the study were collected from a sample of residents for the traditional villages, the Shivaji Nagar slum, and residents scattered in the different sectors.

Turbhe

Turbhe Ward consists of three villages, a wide stretch of slum area, and planned townships divided into numbered sectors. The entire ward is surrounded on all three sides by large chemical industries. Among all the wards in New Bombay, the Turbhe ward has the largest number of slums that are also the most densely populated slums - Turbhe Stores, Hamuman Nagar, Ambedkar Nagar, Ganesh Nagar and Indira Nagar. Close to the Turbhe village, is the nodal area marked by rows of "block like houses," divided into 29 sectors. Turbhe is better known for its commercial complex (Janata Market, APMC Market, cold-storage companies, etc.) than for its

inhabitants. The number of malarious cases and episodes reported was highest in the Turbhe Ward as compared to other wards under the administrative jurisdiction of the NMMC. Data for the study were collected from a sample of residents of the Sanpada village, Turbhe Store slum, and residents scattered in Sector 21.

Koperkhairane

This ward is adjoining the Vashi township, comprises the traditional Koperkhairane village, Khairane village, Bonkode, and CIDCO *chawls* and residential complexes located within different sectors. A larger portion of Koperkhairane is covered by several designer residential complexes, that are yet to be occupied. Construction activities have been responsible for providing the malaria vector with many breeding sites. With the construction activities in Koperkhairane tapering off, the malaria incidence is expected to attenuate. Data for the study were collected from a sample of residents in the Koperkhairane village and the adjoining Bonkode village, a slum, and the low cost housing complexes inhabited by the Marathi speaking *mathadis*.

Project Team and Preliminary Fieldwork

The study was conducted by a team comprising the PI, four RAs - two females with Masters in economics and two males with Masters in urban geography, a part-time consulting entomologist - a senior retired insecticide officer with several years of relevant experience with the Bombay Municipal Corporation, a data entry clerk cum office assistant, and a driver. The study commenced in the first week of August 1995, when the rains had already set in, and was terminated in July 1996. The Team initially visited the proposed research sites to become familiar

with the local ecology, and engaged in informal discussions and interviews with local residents, private practitioners and local public health officials, malaria surveillance staff, to establish rapport, identify key informants, to become familiar with the research setting, and to make a preliminary assessment of the malaria problem in the study locales based on people's narratives. Concurrently, the PI reviewed the malaria surveillance data available with the local municipal health authorities to examine the trends.

The Team's consultative meetings with the Chief Executive Health Officer of the Municipal Corporation of Greater Bombay, and the Assistant Health Officer, Malaria Control, resulted in an altered scope of research and sampling strategy. The geographical scope of the study on the Bombay side was considerably expanded to highlight the recent trend in the city's malaria epidemiology. By taking a sample from four municipal wards instead of only one ward as originally proposed, the study was in a better position to allow representation of a range of socioeconomic status groups affected by malaria in the city - from the underprivileged to the very wealthy citizens of Bombay.

Methods of Data Collection

Ethnographic interviews were conducted with a sample of 200 respondents each from Bombay and New Bombay.⁴ A sample of 50 respondents each was interviewed from A. Ward, D. Ward, F-South Ward and L/N Ward (Chandivali quarry area) in Bombay, and similarly 50 respondents each were interviewed from four municipal administrative wards in New Bombay, namely,

⁴ The background characteristics of the respondents and households have been described in the next chapter.

Belapur, Nerul, Turbhe and Koperkhairane. Out of the total sample of 400 respondents, 30% lived in a slum locality, 18% lived in villages, 16% lived in nodal areas (planned townships in New Bombay), and 36% resided in apartment blocks, housing colonies, high-rise apartments - most of which were in Bombay's A and D ward.

The procedure followed to select the subsample units in each ward addressed local conditions. In the sampling process, care was taken to allow for an adequate representation of different categories of patients and to account for interlocale variations. Considered were those who had received treatment from a municipal/government surveillance worker, and those who had been treated by a private practitioner. Within this subsampling procedure, included was a small sample of "negative" cases - to allow for "false negatives" and 'false positives." For example, in New Bombay, where slums, villages and nodal areas are clearly demarcated, the subsample in each ward was identified with the help of the municipal/Government of Maharashtra malaria surveillance workers, comprising nine positive cases and four negative cases each a slum locality, a village and a node.

Furthermore, four cases each were selected from among patients attending a private practitioner's clinic in different locales (see table 2.1 and 2.2). Names and addresses of cases identified at the private practitioner's clinics were noted down, and visited after at least four weeks had passed so that reflections on the patient's experience with malaria could be documented. Tracking down "confirmed positive" cases based on blood smear records was a time-consuming activity.

Table 2.1

Table 2.1 showing (absolute values) type of cases from Bombay and New Bombay that constituted the sample.

TYPE OF CASE	City		
	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
Positive	163	122	285
Negative	15	19	34
Diagnosis not confirmed*	22	59	81
Total	200	200	400

* Blood test done/not done/diagnosis unconfirmed but treated for malaria/suspected malaria.

Table 2.2

Table 2.2 showing (absolute values) type of cases from different locales in Bombay and New Bombay that constituted the sample.

TYPE OF CASE	Locales			
	SLUM	VILLAGE	NODE	APARTMENTS/ BUILDING COMPLEXES
Positive	77	45	41	122
Negative	5	8	8	13
Diagnosis unconfirmed*	38	18	15	10
Total	120	71	64	145

* Blood test done/not done/diagnosis unconfirmed but treated for malaria/suspected malaria.

Ethnographic Interviews

Following preliminary fieldwork, a draft household interview schedule was initially pretested on a sample of five women in Chandivali quarry area who had reported a fever episode, or an episode of malaria. Their responses were read, and several items of information in the schedule were

modified and a few additional questions/items were introduced in the revised schedule which was again pretested on 10 respondents - five each in Bombay and New Bombay -in slums and villages where information regarding a febrile fever case in the neighborhood was readily available during informal conversations with the local people. Further changes were introduced in the schedule, especially the section devoted to how people made a distinction between *sada tap* (ordinary fever) and malarial fever.

Two items of information that required particular attention were (a) how to word a question that would tell us with a good deal of reliability, whether the respondents could make a distinction between ordinary (nonmalarious) fevers and malaria, and (b) which febrile case in the family should we ask the respondent to narrate in situations where the family had experienced multiple episodes. The first issue was resolved by asking the respondents to tell the difference between *sada tap* (ordinary fever) and *doosra tap* (unspecified other fever). The second issue was resolved by asking the respondents to elaborate on the case that he or she most vividly remembered in terms of its impact on the family. Where possible, the "most recent case" was considered. The scope of the question was thus narrowed down to include only those episodes that the respondent felt were worth reporting.

In addition, the section on private expenditure on health (malaria) was completely revised from what was a simple question "How much money did you spend during the malaria episode that you just narrated?", to a set of two tables which allowed for a breakup of the actual expenses incurred on various facets of the episode - medicines, doctor's fees, expenses on diet, transportation etc.

This penultimate draft of the interview schedule was again pretested on a sample of eight respondents - four females and four males. This time too, the pretesting was restricted to respondents from slums and villages. The schedule could not be pretested on a sample of respondents from the high income areas then, because the research Team did not have the necessary rapport with private practitioners who could give them a list of patients they had recently treated for confirmed or suspected malaria, for pretesting the schedule. Nonetheless, the responses received were found satisfactory, and by then the research Team had become thorough with the structure and contents of the interview schedule, and the manner in which respondents were asked certain sensitive questions. The Team visited the respondents in pairs of two, and style of interviewing had by then graduated from asking straight questions to a free flowing conversational style of eliciting information from the respondents.

The pretesting exercise which went on for exactly 40 days from the date when the first draft of the interview schedule was pretested, provided an excellent means for the research Team to become familiar with the research sites and to establish good rapport with the local people. Although the interview schedule was not pretested in the high income area, no apparent inconsistency was noted in the interview situation when respondents in the high income areas were interviewed. Moreover, by the end of the pretesting phase, the research Team had become so adept at handling an interview situation, that timely adjustments were made if the situation demanded it. To ensure the authenticity of the information elicited during the interview, and to cross-check what was being penned on the interview schedule, 1/3 of the interviews were recorded on tape with the respondent's prior permission. In the due course, the research Team culled out several taped

interviews assayed as "good for case study," in that, the interview was worth transcribing and translating. Besides the household interviews, the research Team maintained a daily diary to record field notes which were shared among the Team members and anecdotes were recalled and discussed over lunch. Case studies of 16 respondents and their families were documented in detail by way of several follow-up visits spread over 4 months.

The original idea that the principal investigator, the consultant epidemiologist, and research assistants would accompany the malaria investigator(s) during their routine surveillance rounds in the community to identify potential respondents was quickly abandoned after the very first field visit. This was done because, an important objective of this study was to document whether people made a clear distinction between ordinary fever and malarial fever, and its implication on treatment seeking behavior and all that it entails.

During the first field visit, the research Team became conscious that they were being closely identified with the malaria surveillance workers and were apparently perceived as "municipal workers." It was commonly heard in two research sites "Oh! The municipality malaria people have come." Realizing that this local perception about the identity of the research Team will have methodological implication, this strategy of accompanying the malaria worker to identify potential respondents was abandoned. Instead, the names and addresses of patients they had treated for confirmed or suspected malaria (presumptive treatment) were recorded and the research Team went to the field independent of the malaria workers and followed up the addresses. Pinpointing the addresses given by the malaria surveillance workers was difficult, time-consuming task. Often

times, the surveillance workers had noted certain landmarks which they were familiar with, but it turned out to be a frustrating exercise for the study Team to locate the landmarks and the addresses.

Focus Group Discussions

Focus group discussions (FGDs) were conducted with nine local women's groups (78 participants in total) and one male member group (8 participants) in New Bombay, between November 1995 and April 1996. FGDs were not conducted in Bombay because malaria cases were widely dispersed, and were not clustered as in the case of New Bombay. Besides, it was impossible for the research Team to bring together a group of people living in high rise apartments. None of the participants in the FGDs had already been interviewed at the household level. The groups were specifically constituted for the FGDs with prior appointments and arrangements. "Consensus" data, and anecdotal evidence were elicited during the FGDs on themes similar to the ones covered in the household interviews. More attention was paid to the issue of preventive measures (especially bed nets), private practitioners and community participation.

All the FGDs were conducted using the standard technique of a moderator and a notes taker, etc., (Khan and Manderson 1992; Khan *et al.* 1991). Besides jotting down discussion notes during the FGDs, all FGDs were recorded on tape, and later meticulously transcribed and translated. The FGDs yielded important anecdotal narrations regarding malaria related death cases in the locality, theme which was not much discussed in the in-depth interviews.

Interviews with Private Practitioners

Alongside the household interviews and FGDs, participant observation in several clinics, more intensively in 16 clinics of private practitioners was conducted to examine (a) how patients report symptoms in cases likely to be malaria and (b) what private practitioners/clinicians do to deal with patients reporting malaria and 'malaria like fever'. A total of 48 private practitioners - six in each of the eight municipal wards selected for the study (four each in Bombay and New Bombay) were interviewed in detail on malaria related issues, and a sample of patients attending the clinics were followed and also informally interviewed to elicit their views on prevention and treatment of malaria, and their experience with the private practitioners in their area.

Contrary to the PI's earlier apprehensions regarding the "obtrusion" factor in conducting participant observation in practitioners' clinics, it did not take more than two visits to the practitioners for the PI and the Staff to become a "familiar figure" in the clinics. Most of the practitioners agreed to participate in the study only after a moment of hesitation. While all the practitioners agreed to being interviewed, less than half of them allowed the staff to observe the doctor-patient interactions for reasons of confidentiality.

Exit-interviews with Customers at Pharmacies

Participant observation was conducted in eight pharmacies - one in each of the eight municipal wards selected for this research. Pharmacists and pharmacy attendants were informally interviewed to elicit information on the sales pattern of antimalarial drugs, antimosquito repellents, and on the changing health-seeking behavior of local people. Malaria related drugs

sales were monitored briefly for three to four hours in each of the eight pharmacies at random to get some insights into the interface between the pharmacy, private practitioners and malaria patients. In addition, forty customers purchasing antimalarial for treatment and prophylaxis, with or without prescription were briefly interviewed to elicit information on medicine purchasing and consumption patterns. Beliefs concerning the actions and perceived efficacy of antimalarials, advice given by pharmacists/ attendants and expenses involved in prevention and treatment of malaria were also elicited.

Data Analysis

Several data sets which were both quantitative and qualitative resulted from the study. The primary data set, namely the ethnographic interviews were processed at two levels. First, variables and items of information which could be coded were listed, and the standard process of preparing a code-book and entering the data in a text editor, followed by translation into system files was followed. Coded data from the ethnographic interviews were processed with the help of an SPSS PC+ version 4 package. Text data were abstracted from each interview schedule, and written on note pads. As most of the interviews were conducted in either Marathi and Hindi, and a small number in English, that were often marked by a linguistic tinge of code-switching, a bulk of the text data was transcribed by the data entry clerk and translated by the PI. Text data abstracted from the interview schedules were cross-checked with taped interviews to ensure that the original "voice" and emotions expressed during the interview were not contaminated while transcribing and translation.

In addition, out of the 40 taped interviews identified by the RAs as "good for case study," 20 were fully translated and transcribed. In selecting the "good for case study" tapes, care was taken to ensure that at least two taped interviews were from each of the eight study locales. These recorded interviews constituted several illness narratives which highlighted some of the key issues pertaining to the cultural interpretation of malaria in the research sites.

The data obtained from the private practitioners were processed separately. A bulk of the data was entered and processed with the help of a DBASE version 3 program, and later translated into an SPSS PC system file. All data entry and processing of the private practitioners interview was done by the PI. Again, text data were abstracted and translated simultaneously. Most of the interviews with the private practitioners were conducted in a mix of Hindi, Marathi and English. Data concerning observations in the clinics, and brief interviews with waiting patients were also processed with the help of a DBASE and SPSS PC+ program. Similarly, the malaria related drug sales data, and exit-interviews with customers purchasing antimalarials, were processed with the help of a DBASE version 3 program and SPSS PC+ program. Text data from the exit-interviews were abstracted and entered on computer using WP for Windows version 6.0a program. All text data from the different data sets were written using a WP6.0a program. Few tape-recorded interviews with private practitioners were fully transcribed and translated by the PI, and reviewed using a WP6.0a. program. Field notes were periodically reviewed and important insightful observations were recorded in a separate computer file. These were later incorporated into the report. As for the FGDs, all the sessions were recorded on tape, and were later transcribed and translated for analysis. Important observations that emerged during the discussions were

incorporated into this report. All written material was finally converted into its present format using a Microsoft Word version 7 program.



CHAPTER III

DEMOGRAPHIC AND SOCIOECONOMIC PROFILE

This chapter presents the demographic and socioeconomic profile of the four hundred sample households and the ecological conditions in which they lived in Bombay and New Bombay.¹ The background characteristics of the respondents have been discussed first, followed by household characteristics and the infrastructure facilities that were available to the households. Quantitative data for the two cities have been clubbed for much of the analysis, but where appropriate, trends in terms of similarities and differences between Bombay and New Bombay had been reviewed by breaking down the data into appropriate categories. Most of the variables examined in this chapter are "block-booked," in that, households have been described in terms of certain characteristics that also reflect the other characteristics (Rosenberg 1968; p26). For the most part, trends have been examined in terms of percentages differences rather than correlation coefficients. As described in the foregoing two chapters, Bombay and New Bombay differed from each other along several lines. There were striking differences between the two cities in terms of their physical layout, social history, patterns of social composition and social segregation, population size and densities, and the infrastructure and opportunity structure available to their inhabitants. The deleterious effects of urbanization were evident in both the cities - most conspicuously marked by sprawling slums, environmental pollution, and persistence of socio-spatial differences. Data on the demographic and socioeconomic profile of the residents of the two cities discussed in this following pages provide the necessary contextual information on the units of analysis.

¹As noted in the foregoing chapter, although information was elicited from a sample of individual respondents, the household was treated as the principal unit of analysis.

Sex

In the sample of 400 respondents, 70% were females (mostly mothers/prime-caretakers) and 30% were males. An over-representation of females in the study sample was because we conducted most of the household interviews during the morning, afternoon and early evening hours - times when most of the men folk were away from their homes on work. Interviews with male members were conducted during weekends and holidays.

Marital Status

Eighty-six percent of the respondents were married, 10% were single, 3% were widows, and 1% were separated from their spouses.

Education

In the sample, 26% of the respondents were not educated. There were slightly more number of uneducated respondents from New Bombay (29%) as compared to Bombay (22%). Twenty percent had studied up to the primary level, and 30% had studied up to the secondary level/higher secondary level. The remaining 25% were graduates, post-graduates and professionals. The number of respondents who were graduates, postgraduates and professionals was significantly higher in Bombay (31%) as compared to New Bombay (19%).

Occupation

Majority of the respondents 46% were homemakers, 20% were in the service category (clerks etc.), 15% were self-employed, 10% were laborers, 1% were professionals (engineers, artists),

2% were students, 2% were leading a retired life and 4% were "unemployed" at the time of the interview.

Religion

Eighty-nine percent of the respondents were Hindus, 7% were Muslims, and the remaining 4% were either Christians, Sikhs, Neo-Buddhists and Jains.

Native Place/Place of Origin

Majority of the households (56%) held the state of Maharashtra as their native state - 52% of the households from Bombay and 59% of the households from New Bombay. However, several of them were not natives of Bombay and New Bombay, but have migrated into the cities from rural Maharashtra. Only 10% of the of the household were originally from New Bombay - most of these households were from the traditional villages covered in the study. Seven percent of the households were from Gujarat, 6% from Uttar Pradesh, 5% from Karnataka, 3% from Rajasthan, 3% from Delhi, 3% from Punjab and the remaining 10% were either from Bihar, Andhra Pradesh, Madhya Pradesh, Himachal Pradesh, Goa, Kerala, West Bengal (Calcutta), Tamil Nadu, Haryana or Jammu Kashmir.

Type of Family and Family Size

Fifty-seven percent of the households constituted a nuclear type of a family, and the remaining 43% represented a joint/extended family. The proportion of households with a nuclear structure was significantly greater in New Bombay (69%) as compared to Bombay (45%). The average

household size for the total sample of was 6 members, but there was significant difference between the average number of members in a household in Bombay (7.4) and New Bombay (5.5), implying that the households in New Bombay were smaller in size as compared to those in Bombay. Some of the households in Bombay had more than 10 members.

Infants and Children in the Household

Only 7% of the households had at least one infant in the house.² Seventeen percent of the households did not have a child (defined as 16 years of age or less) in the household. The mean number of children in the total sample of households was 2.5. Their average number of children in the Bombay households was slightly higher (2.4) as compared to those in New Bombay (2.19).

Adult Member in the Family

In 35% of the households there were only two adults - usually husband-wife. Such households were significantly more in New Bombay (71 %) as compared to Bombay (29%). In 50% of the households, there were between 3 and 5 adults, and in the remaining 14% of the households, there were between 6 and 8 adults.

Highest Level of Educational Attainment in the Household

In 3% of the households there was no one who had received any formal education. In 18% of the households, there was at least one member who had been educated up to the primary level, and in



40% of the households at least one member had received secondary/higher secondary level of education. In the remaining 39% of the households, the person with the highest level of education was a graduate, postgraduate or had received professional training. There was a significant difference in this regard between households from Bombay (45 %) and New Bombay (34%) as far as the highest level of educational attainment in the household was concerned.

Household Income

The household's monthly income was computed by adding up all the incomes/earnings from all the sources that the respondent had mentioned. As the study covered a range of households - those that were totally impoverished and lived in tiny huts along railway tracks, and also those who lived in the ultramodern residential complexes in Bombay, ascertaining accurate monthly incomes of such households was impossible. Nevertheless, given limitations of determining the exact incomes of the peoples of Bombay, the data revealed that 14% of the households belonged to the low and very low income bracket (less than 1,500 rupees per month) 33% were in the lower-middle income bracket (1600 to 3000), 23% were in the middle income bracket (3040-6000), 8% had a high monthly income (6100-9200), and the remaining 23% were in the "extremely rich" category, with most of them having average monthly incomes not less than 50,000 rupees and having assets worth millions of Rs.

² Our attempts to elicit pregnancy related information, whether any member in the family was pregnant, was not met with much success, given that pregnancy itself is considered a culturally sensitive subject. The limited information elicited on this crucial information was grossly not representative, and therefore the variable was eliminated from the analysis. However, some important information on pregnancy and malaria was obtained during the FGDs.

Educational Status of the Spouse

Twenty-four percent of the respondents had spouses who were not educated (excluding those who did not have a spouse), 20% had studied up to the primary level, and another 26% had studied up to the secondary level/higher secondary level. The remaining 30% of the spouses were graduates, post graduates or had received professional training. There was no significant difference between the number of uneducated spouses and also those with graduate level education and beyond, in Bombay and New Bombay .

Occupation of the Spouse

Majority of the respondents' spouses (41%) (excluding those who did not have a spouse) were in the service category (clerks etc.), 26% were homemakers, 13% were laborers, 10% were in business, 3% were self-employed, 1% were professionals, 3% were leading a retired life, and 1% were unemployed.

Dwelling Ownership

Sixty-six of the households lived in dwellings that they owned, and the remaining 34% living in rented accommodation. The number of households that owned their place of accommodation was significantly higher in New Bombay (72%) as compared to the households in Bombay (59%).

Type of House

Fifty percent of the households lived in dwellings that were made of cement concrete and had a RCC roof. Of these, 7% were in skyscrapers - all in Bombay, 30% lived in dwellings that were

kuccha - most of which were huts or small dwellings with a mud wall, and with a thatched roof/roof made of polyethylene sheets. The remaining 20% lived in dwellings that were *pukka* - most of which were solid houses, but with a tiled roof without an RCC slab for a ceiling. Households that lived in cemented houses were significantly more in Bombay (68%) as compared to New Bombay (33%).

Dwelling Size

A large majority of the households (71%) lived in dwellings that had only one or two rooms - 35% in a one room tenement, and 36% in a two-room tenement. Ten percent each lived in houses that had 3, 4 and 5+ rooms respectively. The mean number of rooms for each household in Bombay was 2.67 as compared to 1.9 in New Bombay. A significantly larger number of households from Bombay (31%) lived in dwellings that had 4 or more rooms as compared to those households from New Bombay (9%). Using our own criteria, 62% of the households lived in dwellings that were classified as "congested." The number of dwellings that were considered as "congested" was significantly higher in New Bombay (71%) as compared to Bombay (54%). However, in 91% of the households, all members slept inside the house throughout the year, and in the remaining 9% of the households, at least one member slept outside the house, especially during the summer.

Infrastructure

Majority of the dwellings (56%) had a drinking water tap inside their home, and 43% of them had to fetch water from a tap/source of water located outside their home. Five households had the

privilege of a water tap inside and outside their homes. Given the scarcity and irregularity of municipal water supply in most parts of Bombay and New Bombay, a large majority (93%) of the households had to store water in drums/cans, either as a "backup" in case the water supply stopped, or for use during the period when the municipality stopped the water supply during the day. A few of these households had to store water in drums and cans for several days because of the severe water problem in their locality. The remaining 7% of the households had an abundant supply of municipal water - most of them lived in the skyscrapers in Bombay - who did not feel the need to store water in their respective homes/flats.

In terms of waste water/sewerage disposal facilities, 50% of the households lived in a locality that had a municipal drainage system, while 21% of the households lived in a locality that had gutters but which were open and often choked with uncleared rubbish. The remaining 29% of the households lived in localities that did not have drains, and waste water was left out in the open. While 57% of the households threw/dispensed their garbage in a dustbin, the remaining 43% had no option but to throw their garbage in the open. There was no significant difference in terms of this facility in Bombay and New Bombay. As for toilet/defecation facilities, while 46% of the households had a toilet inside their dwelling, 26% had to use a common/community toilet facility, and a significant percentage (28%) of the households had to defecate in the open. Households from Bombay were relatively better placed in this regard as compared to those from New Bombay. Regarding availability of electricity, 89% of the households had electricity in their homes, while the remaining 11% had no access to this facility. Households from Bombay (92%) were only slightly better placed in this regard as compared to those from New Bombay (87).

However, significantly, only 64% of the households had the privilege of a regular electricity supply. The problem of irregular and often erratic electricity supply was faced by a significantly more number of households from New Bombay (54%) as compared to 12% from Bombay. Eleven percent of the households in the study simply did not have access to electricity.

Length of Stay in Present Locality

Twenty percent of the households had lived in their present locality since birth, whereas, 7% had lived for less than a year, 21% between 1 and 5 years, 12% between 6 and 10 years, 22% between 11 and 20 years, and the remaining 18% for more than 21 years, but not since birth.

Length of Stay in Bombay and New Bombay

Eighteen per cent had lived in Bombay for the past five years or less, 6% for the past six to 10 years, 10% since 11-15 years, 18% between 16 and 20 years and the remaining 48% were in Bombay for 20 years or more. As for those who lived in New Bombay, 31% had been in New Bombay for the past five years or less, 18% for the past six to 10 years, 19% since 11-15 years, 6% between 16-20 years, and the remaining 26% for 20+ years.

Intralocale Migration

Eighty-seven percent of the households had not migrated from one place to another either within Bombay or New Bombay since they first came to live in their present locality. The remaining 13% of the households had shifted their homes from one locale to another, but within Bombay and New Bombay. Less than 1% of them had migrated from Bombay to New Bombay or vice versa.

In summary, this chapter examined the demographic and socioeconomic profile of the respondents. The data revealed that the respondents and their respective households had wide ranging characteristics. Three important characteristics of the households that emerged from these data were a) households covered in this study represented those who lived in abject poverty, and also those who lived in ultramodern homes in Bombay b) there were important differences in terms of family size and composition between households in Bombay and New Bombay, and the infrastructure facilities available to the residents of the two cities, and c) intra and inter-city migration among the residents of Bombay and New Bombay was negligible. These background features have important have important implications for data analyzed in the forthcoming chapters.

CHAPTER IV

LAY INTERPRETATION AND RESPONSE TO MALARIA

"The course of the chronic diseases is determined not merely by biomedical factors but also by the way in which the patient deals with the illness. The coping strategies - problem analysis, presence and use of social support - problem-solving and treatment behavior may deviate substantially from the strict courses of action required for cure of the disease. Poor compliance with chemotherapy, and the common perception that side-effects of chemotherapy are far more debilitating than the disease, contribute to the protracted course of the disease and uncertainty as to the validity of the "cure" (Jayawardene 1993; p1169).

This chapter focuses on the central theme of the study, namely, how lay people who live in the malaria endemic areas of Bombay and New Bombay interpret and respond to the disease in terms of illness etiology (individual's perception of symptoms and causation), treatment and cure, and narrate their personal encounter with the illness. Discussed are related issues that reflect upon the microeconomics of the health seeking behavior (lay reckoning of the cost of treatment), and culturally appropriate measures taken to prevent the illness, and suggestive solutions to arrest the menace. Emphasized is how certain sociocultural processes interact to produce a constellation of signs, symptoms, and behavior changes recognized by cultural group members and responded to according to the dominant cultural model (Browner *et al.* 1988; Price 1987).¹

In the present context, the study aimed at eliciting the dominant cultural models about malaria in varying cultural settings, i.e., how people in slums, villages and middle and high income neighborhoods define and redefine the meanings they attach to the illness through the sharing of

¹ As defined by D'Andrade (1987), a cultural model is a cognitive schema that is intersubjectively shared by a social group. Such models typically consist of a small number of conceptual objects and their relation to each other (D'Andrade 1987, p 112). Cultural models are carried by individuals, but are partly constructed and refined through conversation and reflection (Price 1987, p333).

knowledge and experiences, and the actions they take in accordance with cultural expectations. Besides discussing the data from the 400 ethnographic interviews conducted in Bombay and New Bombay, insightful comments of Focus Group Discussion (FGD) participants have also been incorporated in this chapter. To provide a more balanced representation of the subject-matter, quantitative data have been interlaced with qualitative text data, mainly excerpts from recorded interviews.² The chapter has been divided into three sections. Section I looks at how lay people in Bombay and New Bombay interpret malaria in terms of its etiology. Section II focuses on how they actually deal with an illness episode that is labeled as malaria. Incorporated in this section are also the illness narratives as told by the respondents, and their opinions about private medical practitioners. Section III reviews what lay people in Bombay and New Bombay do as preventive measures against malaria, and what they believe needs to be done to put an end to the malady.

Section I

Lay Interpretation of Malaria

Most Common Illnesses in the Locality

During our preliminary fieldwork in the research settings in Bombay and New Bombay, we noted that the local people were “preoccupied” with malaria and its effect on their everyday life. We were therefore interested in finding out how they compared malaria with other illnesses that were current in their neighborhood. Following queries on their living conditions and everyday lifestyle, we asked our respondents to list out names of illnesses they believed were “most common” in their vicinity, and to further specify the ones that concerned them the most. The most frequently

² To avoid problems associated with comparing data with small sample sizes, sections of the quantitative data for Bombay and the New Bombay have been clubbed for analysis. In sections where the data permitted a comparison between the two cities without distorting the trend as a result of small Ns, the data have been discussed accordingly.

indicated illness labels were in the following order (N=792*):³ "Malaria" or *thanditap* in Marathi, or *thandi-bukhar* in Hindi was mentioned by 94% of the respondents.⁴ ⁵ Fifty-one percent mentioned cough and cold, 21% mentioned jaundice (*kavil* in Marathi), 11% mentioned diarrhea, and between 5% and 2% mentioned TB, "typhoid," asthma, "viral" illness, throat infection, etc. All the respondents from New Bombay, and a majority (96%) of the respondents from Bombay said that malaria was "very common" in their locality.

When asked whether they had noticed a significant increase in malaria in their neighborhood during the past two or three years, 55% of the respondents suggested that malaria had definitely shown an increase,⁶ while 9% said that malaria in their neighborhood had started only recently (since last year), and the remaining 26% either said that there had been no increase in malaria in their neighborhood or held an ambivalent opinion. As the data in Table 4.1 reveal, a significant percentage of the people of New Bombay believed that malaria in their neighborhood was as intense as it had been over the past two or three years. Many even added that its intensity had recently increased. In Bombay, most of the respondents, particularly from the A Ward and D Ward said that the problem had started only during the past one or two years.

³ Hereafter, asterisk denotes total of multiple responses, and numbers in parentheses refer to the bases upon which percentages are calculated.

⁴ We had anticipated that "malaria" would be outstandingly represented in the "most common illness" for two reasons. First, all the 400 respondents who were interviewed for the study belonged to households with at least one episode of "malaria." In several households, members had often experienced multiple episodes of malaria during the past one or two years. Second, all interviews were conducted in locales that were "endemic" for malaria according to the municipal sources, and where malaria commonly featured in peoples' conversations about everyday events.

⁵ *Thanditap* in Marathi literally refers to symptoms of chills (*thandi*) accompanied by high temperature (*tap*) which is characteristic of malaria, and people use the term interchangeably with malaria.

⁶ Peoples opinions regarding whether malaria had increased or decreased in their neighborhood were informed by lay estimates of the frequency with which members in the household were becoming sick due to malaria, and how often people in the neighborhood were contracting and talking about malaria. On-going media reports about the "malaria havoc" in Bombay and New Bombay also influenced people's opinions regarding the intensity of malaria.

Table 4.1

Table 4.1 showing (in percentages) whether people in the different municipal wards of Bombay and New Bombay (eight research sites) believed that malaria in their neighborhood had increased or decreased over the past two years.

	Bombay				New Bombay			
Whether Malaria Had Increased or Decreased	A Ward	D Ward	F/S Ward	Chandiv ali	Belapur	Nerul	Turbhe	Koperk hairane
Increased	20	32	64	88	68	72	52	42
Decreased	2	-	-	2	4	2	2	10
Started Recently	62	-	6	2	-	-	-	2
Can't Say/ Don't Know	16	68	30	8	28	26	46	46
Total % (N)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)

Lay perceptions regarding why malaria was currently the most common illness in their locality were backed by several explanations (N = 755*).⁷ Thirty-four percent of the respondents attributed the problem to the significant increase they had noticed in the number of mosquitoes in their homes and the neighborhood.⁸ Another 30% said that the problem had to do with increasing volumes of uncleared garbage during the past few years - accumulated garbage being breeding/resting place for mosquitoes - in their locality. Eleven percent attributed the problem to the presence of uncovered drains (also believed to be ideal breeding/resting places for mosquitoes), and 6% said that malaria had increased because of increasing air/industrial pollution

⁷ Excludes those who had said that malaria had not increased in their locality or held an ambivalent opinion.

gilex

(foul smell).⁹ Three percent said that water pollution was a contributing factor, and between 2% and 5% attributed the increase to factors such as an increase in construction activities, stagnant water, slothfulness of municipal workers in clearing garbage, cleaning gutters, and the increasing volume of rotting vegetation in their neighborhood. However, 4% of the respondents either did not know or were unsure why malaria had become a common illness in their neighborhood.

Differences in the opinions of respondents from Bombay and New Bombay regarding factors responsible for the increase in malaria in their neighborhood have been presented in Table 4.2.

Table 4.2

Table 4.2 showing (multiple responses in percentages) reasons why people in Bombay and New Bombay believed that malaria had increased in their neighborhood.

	City	
REASONS WHY THERE HAS BEEN AN INCREASE IN MALARIA	BOMBAY	NEW BOMBAY
Dirt/garbage has increased	65	41
Mosquitoes have increased	64	32
Construction activities have increased	21	33
Population has increased	14	23
Industrial pollution has increased	13	9
Weather conditions have changed	7	7
Vegetation has increased	4	7
Other reasons	17	8
Total (N)=209* Includes only those who had said that malaria had increased in the neighborhood.	102*	117*

⁸ As will be discussed later in the chapter, most people in Bombay and New Bombay saw a connection between mosquitoes and malaria, but their "mosquito-malaria" explanatory model did not necessarily correspond with the entomological facts about specific types of mosquitoes being malaria vectors.

⁹ Air and industrial pollution as being responsible for the increase in malaria was mostly suggested by the respondents from the slums and villages in the Turbhe Ward and Koperkhairane Ward in New Bombay, where obnoxious smelling effluents from the chemical factories in the neighboring MIDC industrial area often reached alarming levels of density. We could not document whether these respondents believed that air/industrial pollution was a direct cause for malaria or that it only exacerbated the problem by deteriorating their overall health - resistance.

The following are examples of the explanations given by respondents from two research sites in Bombay - Chandivali quarry area in L/N Ward and Malabar Hill in the D Ward. Speaking for the people of Chandivali quarry area, Durgabai, a 35 years old lady said:

"Even we [people of Chandivali] have been wondering why there is so much malaria here. We don't throw our garbage in front of our homes, we keep our surroundings clean, but still there is so much malaria. We are amazed that, earlier there were not so many mosquitoes, but suddenly they have increased tremendously during the past few years. When we go to fetch water during the evening and night, mosquitoes don't allow us to even stand near the tap. They bite us viciously."

Reflecting on the same problem, Dilip, a 28 years old quarry worker from the same quarry area in Chandivali said:

"I think that mosquitoes breed in those huge pits dug for constructing the new buildings (MHADA and Hiranandani Complex) where water stagnates, and that is why there are so many mosquitoes here. I have been often wondering - the water that we drink has been the same, people are also the same, yet malaria has increased so much in this quarry area. Why this has happened, I don't know - I am baffled."¹⁰

According to Mrs. Garg, a 48 years old educated lady from Walkeshwar, Malabar Hill, D Ward, malaria in her neighborhood had increased only during the past few years. She elaborated:

"We moved into this locality in 1960. Then, we did not have malaria in this area, and the mosquitoes were also not so many. In 1984-85, construction work for some skyscrapers had begun, but because of the FSI (Floor Space Index) problem, BMC (municipality) did not allow the builders to increase the height of the buildings and further construction of those buildings was halted. During the rainy season, all these incomplete and unoccupied buildings used to get filled with rain water, which became ideal places for mosquitoes to breed. Malaria has become rampant in this area since 1986 - ever since the builders stopped the construction of those buildings."¹¹

¹⁰ Informal discussion with several residents of the Chandivali quarry area revealed that until very recently years before, there was negligible malaria in that area. Moreover, the local people were resentful of the rapidly expanding construction activities in their vicinity, which they saw as an imminent threat to their livelihood.

¹¹ We verified this entomologically correct sounding explanation with the consulting entomologist and the D Ward Pest Control Officer. In the due course, we also noted that a local pathologist and a few private practitioners were

Besides the "buildings and construction" factor, Mr. Sachin, a 45 years old businessperson from Malabar Hill, offered an alternate explanation. According to him:

"Malaria has significantly increased in Malabar Hill and Walkeshwar area since the past two or three years - ever since rampant construction activities started in this area. Besides, there is a temple down the road which organizes festivities. Devotees who attend the functions defecate in the open...the pond (Banganga) which is supposed to be very holy, has become dirty, as a result mosquitoes breed there in plenty, and therefore malaria is spreading."

Informal discussions with the people of Malabar Hill and Walkeshwar revealed that "the dirty pond at "Banganga" (an otherwise sacred place) was a popular theory among the educated and wealthy, to explain why there was so much malaria in that area. The D Ward Pest Control Officer and our consulting entomologist ruled out the possibility that the Banganga pond could be a source or *A. stephensi* breeding, and thus responsible for rampant malaria in the vicinity. In the first place, the pond water being polluted, was nonconducive for anopheles mosquitoes to breed, and second, the water body was too large for the larvae to survive their natural predators. A media report on this issue that appeared in Bombay Times, December 12, 1995 read as follows:

"Stagnant stretches of water are perfect breeding grounds for mosquitoes and the historic Banganga tank at Walkeshwar, say some doctors practicing in the area, could be the cause of the sudden upsurge of the disease in south Bombay. The Banganga tank is among the most neglected patches of water in the city, thus inadvertently becoming the breeding ground for mosquitoes and a health hazard for all and sundry, say the doctors. The tank has been growing dirtier by the day as the mess left by visitors and residents is not regularly cleaned...A junior overseer, Kadam, says, "Rumors about the area becoming a health hazard for the south Bombay residents are unfounded. There is no breeding, as the pest control department oversees the area on a weekly basis to weed out possible health hazards."¹²

giving this "incomplete, unoccupied buildings in which rain water accumulated" explanation to their patients who inquired with them about the growing malaria problem in Malabar Hill area.

¹² As already elaborated in the introductory chapter, D ward has historically been a malarious area (Bentley 1911; Covell 1928). Following Bentley's report (1911), Covell (1928) made the following observation in his "Malaria in Bombay - 1928" report: "Fountains, garden tanks and tubs - these are a fruitful source of Anopheline breeding, and constitute a very definite danger to the health of the City. The majority are situated in D Ward, which contains many

On the New Bombay side, explanations offered by the respondents for the increase in malaria over the past few years varied across the three locales - slums, villages and nodal areas. Several of our respondents who lived in villages saw a connection between construction (read migrants) and infrastructure development activities (read open drains) in their vicinity, and increase in malaria. Native inhabitants of Belapur village and Sanpada village in particular saw a connection between the influx of migrant laborers from outside the state of Maharashtra, hefty increase in New Bombay's population, increasing volumes of garbage that did not get cleared, stagnant drains, and the increase in malaria they had noticed in their neighborhood.

Mrs. Surekha, a 30 year old homemaker from Belapur village said:

"Mosquitoes and malaria has increased in this area since the past two years...ever since CIDCO built the gutters/drains...the village pond has also become very dirty...the fish market is not clean."¹³

Clearly, as Stephens *et al.* have explained:

"Mosquitoes [are] apparently regarded as one symptom of wider environmental deterioration, and when these concerns emerge, the subject of mosquitoes tend[s] to be subsumed in broader discussions of dirt and rubbish, drainage and sanitation, and council services in general." (Stephens *et al.* 1995; p100).

houses with large gardens, belonging to the most wealthy sections of the population. Almost every garden in this locality contains several masonry tanks and iron or wooden tubs, many of the latter being sunk in the ground. The presence of these dangerous breeding-places, the adequate inspection of which would entail the employment of a very large staff, is the chief source of malaria in this part of Bombay." (Covell (1928) 1990, p24). Clearly, the situation seems to have changed little over the years, as scores of stagnant water bodies because of the leakage from the main water supply tank on Malabar Hill ("Hanging Garden"), thousands of cisterns left open to the skies, untreated water fountains and decoration pieces in public gardens and inside plush homes, offers a more entomologically valid explanation for the increase in *A. stephensi* breeding and thus malaria transmission.

¹³ Informal discussions with the people of the Belapur village revealed that, many local residents attributed the increase in malaria, or even the very presence of malaria in the village, to the village pond that was being continuously polluted especially by the migrants who lived in the village as tenants. As with the "Banganga" explanation in Bombay's D Ward, many people from Belapur made a loose association between the polluted pond, mosquitoes and malaria. As noted earlier, the village pond was too large a water body to support *A. stephensi* breeding, and besides, the water being polluted, it was unlikely to be an attractive breeding site for anopheles mosquitoes.

Commenting on how things had changed over the years in New Bombay, Mrs. Vanita, a 45 years old lady from Nerul Village had this to say:

"Earlier (before CIDCO took over the land) there was lot of *sheti* (farm land)...the air was good...there were mosquitoes, but nothing like what we see today (in terms of density).¹⁴ Malaria was unheard of in this area. In those days, there were hardly any doctors in this area, and those who practiced found it difficult to even earn 20 Rs a day, but now, you must have seen, there is a queue of patients at their clinics...all malaria patients. In those days, even one injection at the Belapur PHC was sufficient, but now doctor's medicines don't seem to stop (meaning treatment continues for long). Then, there were no doctors here...nor was there any illness of this kind."

Lay Perception about Seasonality of Malaria

In areas where malaria is unstable, and where transmission does not occur throughout the year, it has the characteristics of a seasonal disease.¹⁵ Commenting on the seasonal distribution of malaria in Bombay, Covell had made a note of the following in the year 1928:

"The seasonal incidence of malaria in Bombay is very regular. The least malarious month in the year is usually March. The monthly incidence of the disease is very slightly higher in April, and remains practically constant throughout April, May and June. The "malaria season" begins in the latter half of July, and from then the incidence steadily rises to its highest point, which is usually reached in October, September and October being the most malarious months. In November the number of cases occurring falls rapidly, and continues to decrease until the minimum figure is reached in March. The seasonal incidence of the disease is well known."(Covell 1928; p33).

However, in Bombay and New Bombay (as elsewhere in urban India), where *A. stephensi* has adapted itself to the local conditions, the seasonality of the disease is obscured by the availability of perennial breeding sites - cisterns, fountains, domestic water storage tanks, etc. We addressed

¹⁴ For the native inhabitants of New Bombay, mosquitoes and malaria epitomized their larger concerns surrounding loss of agricultural and salt pan lands to CIDCO under the Land Acquisition Act 1894. Malaria only added to their problems of limited access to resources and the resultant loss of livelihood.

¹⁵ The maximum intensity of malaria in India is recorded during the months that immediately follow the rainy season, i.e., in October or November (cf. Bentley 1911; Covell 1928; Rao 1950; Bouma and van der Kaay 1996).

the question of lay perceptions about the seasonality of malaria from the point of exploring the avoidance measures people take in anticipation of the “malaria season.” We asked our respondents whether they believed that malaria was more during a particular time in a year. The data did not reveal a clustering of responses around a particular time of the year (or season). Eighteen percent of the respondents said that they could not specify any particular season during which malaria became very common.¹⁶ Importantly, another 23% said that malaria was prevalent throughout the year and is was not season-specific. The remaining 59% spoke of the rainy season and especially thereafter during the “Diwali” festival, and a month or two into the winter season (November and December). Those who said that malaria was more common during the monsoon season believed that this was the time when stagnant water and accumulated garbage in the neighborhood increased, drains got choked (making it easier for mosquitoes to breed), and municipal workers became particularly lackadaisical - all factors that significantly contribute to an increase in malaria.

Type of Fever

An important research question we raised in this study was whether lay persons who live in malaria endemic zones made a distinction at some level between ordinary fever and malarial fever. Our concern surrounded the issue of “symptom sensitivity” - whether people with high symptom sensitivity sought treatment more promptly. As a first question to broach the topic of health problems, we asked our respondents: "Has anyone in your house been ill with "fever" in the last

¹⁶ These respondents had either heard about the "malaria epidemic" for the first time in their neighborhood, or they did not consider the situation to be of an "epidemic" magnitude, or that in their knowledge, malaria had become

two or three months?^{17 18} All the respondents said that at least one member in their house had fever during the reference period. Respondents were then asked to consider the "most current case" (hereafter index case) of fever in their family and to elaborate on what kind of fever they thought it was - not necessarily malarial or ordinary fever, but what label they had given it according to their local taxonomy. Seventy-three percent of the respondents said that the index fever was *thanditap* or *thandibukhar*- "malaria" or malarial fever, and 20% said that what they had initially believed was a *sadatap* (ordinary fever) turned out to be *thanditap* or *thandibukhar* following the blood sample report/doctor's diagnosis. Four percent said that it was suspected malarial fever, and the remaining 3% said that while they believed that it was "viral" fever, the doctor had diagnosed it as suspected malaria.

Lay Distinction Between Ordinary Fever and Malaria (Indigenous Symptomatology)

To enable the respondents to elaborate on the issue of symptom recognition and symptom sensitivity, we asked: "How would you normally distinguish symptoms typical of malaria from other illnesses that are common in your neighborhood?" The data revealed that people in all the research sites in Bombay and New Bombay were remarkably familiar with the typical symptoms of malaria. An overwhelming majority averred that if they were confronted with the situation, they could easily make a distinction between malaria and other illnesses complicated by fever, because by now they had become "very familiar" with the typical symptoms, either through

prevalent only recently, which made it hard for them to make a judgment regarding its seasonality. Most of them did not want to make a guess.

¹⁷This was a rhetorical question because all the cases selected by the research team for the ethnographic interviews were "fever" cases, either diagnosed for malaria, or treated for suspected malaria.

personal experience with the illness, or by observing a family member, a neighbor who had an attack of malaria recently. As Price (1987) has pointed out:

“Individuals gain information about entire illness episodes without having personally experienced those events. Such secondhand episodes are integrated with those the person has directly experienced...Since illness situations are quite variable, no one is likely to experience enough episodes firsthand...Verbal transmission of the outlines of other episodes also affects development of general cultural models.” (Price 1987, p333).

Most of the respondents mentioned more than one symptom (multiple responses) as characteristic of malaria - bouts of shivering (51%), severe frontal headache (45%), body ache/pain (39%), vomiting (32%) weakness (29%), nausea and anorexia (27%), intermittent fever (15%) longer lasting fever (than ordinary fever) (8%), giddiness/ dizziness (7%), and high fever (23%). A few others, especially from the slums and villages in New Bombay and Chandivali quarry area in Bombay, said that if a person had malarial fever, then hospitalization and I.V. drip salines were indispensable to bring it under control. Only a small percentage of the respondents (3%) were unable to make a distinction between malaria fever and ordinary fever, or other illnesses complicated by fever.

Altogether, the data revealed that irrespective of the socioeconomic status and place of residence - slums, villages, townships, plush apartment buildings - almost all those whom we interviewed could make some distinction between ordinary fever and malarial fever. Most of them could specify the classical symptoms typically associated with malaria - high fever that did not subside easily, severe bodyache/joint pains, loss of appetite, malaise, vomiting and rigors - "fever filled

¹⁸ When asking this question, we were careful not to use the terms *sadatap* or *thanditap/thandibukhar*, which were local reference terms for malaria.

with shivering."¹⁹ A few respondents tried to make a distinction between ordinary fever and malarial fever based on the nature of symptoms that fitted their local illness categories. As Igun notes:

"Every person has a finite set of illness categories (derived from direct experience or learnt from interaction with others in the culture) which he may use to label illness states. The person compares the configuration of these categories with the symptoms which represents a deviation from what he recognises as his normal state of health. When this comparison results in the conclusion that the symptoms approximate the configuration of any of the illness categories the person may judge himself to be in that illness state. [This label helps to determine the course of treatment he is likely to adopt] (Igun 1979, p 448)."

Mr. Sachin, a 45 years old businessperson from Malabar Hill (D Ward), summarized the distinction between malaria and ordinary fever:

"Malaria fever is like a stopwatch...it comes and goes every alternate day...in the evenings and remains for a short period. Ordinary fever comes without any warning, and you can even treat it at home. It does not pull you down like malaria does, or set your family members worrying."

However, Mrs. Shakuntala, a 50 years old homemaker from Nana Chowk area in D Ward expressed her doubts about whether there was anything like typical malaria symptoms anymore.

"These days symptoms of malaria have changed. There seems to be no difference between ordinary fever and malaria. Many people from this building where I live, have been diagnosed for malaria even when they did not have shivering."

Mr. Khan, a 40 years old quarry worker from Chandivali made a distinction between malaria and ordinary fever in the following words:

"In malaria, *kad kad karke bukhar ata hai* (fever comes with shivering). The person becomes cold, and sweats a lot. The fever comes for one day, and returns after three days. Body starts to shiver, and then the fever shoots up. Then the person starts to sweat profusely, and the fever goes away. Head becomes heavy. But if it is ordinary fever, it goes away quickly and doesn't come back again."

¹⁹ This trend may not be considered as conclusive given that this observation is restricted only to those households that had experienced at least one episode of malaria during the past few months.

Mrs. Sushila, a 28 years old homemaker from the same quarry area in Chandivali had this to say:

"In this (malaria), one gets severe body pain, and fever comes with shivering. Even if you cover yourself with 12 *godhadis* (hyperbole - rugs), shivering will not stop. You lose your appetite and if you eat something, you will vomit it out. Even the malaria tablets are terrible. After you eat the tablets, your head starts spinning (feel giddy). But in ordinary fever, nothing of this sort happens. You become all right in a day or two. Nowadays in this neighborhood, nobody gets ordinary fever. Everyone gets only malaria (fever)."

In New Bombay, Mrs. Shulata, a 38 years old homemaker from Sanpada village highlighted the symptoms that had helped her to decide whether her illness was malaria or some other illness marked by fever. According to her:

"In malaria fever, there is joint pains, stomach upset, no appetite, water tastes bitter, and we start to shiver while talking. Even if we cover ourselves with all the bedsheets/pullovers in the house, the shivering does not stop."

For few of the respondents, the symptoms typically associated with malaria represented only the initial stage of a disease, which if wrongly treated or neglected graduates into typhoid or pneumonia. They explained this gradation of symptoms into a "higher illness" as indicative of a serious illness - that frightened them more than malaria.

Mr. Mahesh, a 20 years old unemployed youth from Mhape slum, New Bombay summarized what we found in due course was a popular cultural model of malaria that existed in some locales in New Bombay, i.e., how if left untreated, malaria graduated into other forms of serious illnesses.

According to Mr. Mahesh:

"When we get *thanditap*, we start to vomit, so we have no choice but to run to the doctor and take an injection. If we don't take an injection from the doctor, *thanditap* will become *kavil* (jaundice) or typhoid. If *illaj* (treatment) is not done in time, then malaria will exacerbate."

Lay Perceptions about Etiology of Malaria

Another important focus of this research was on the local explanatory models about illness causation - specifically, what lay persons²⁰ believe causes malaria.²⁰ We wanted to know the extent to which people in Bombay and New Bombay used the "mosquito-only" model in their etiological explanations about malaria. To explore this, we asked the respondents a plain question - "What according to you causes malaria?" Nearly all (98%) the respondents said that malaria was caused by mosquitoes. However, as already noted earlier, mosquitoes constituted only one among the other possible causes ranging from accumulated filth/garbage to air and water pollution (N=459*).

As many as 45% of the respondents mentioned that the bite of any unspecified mosquito could cause malaria. None of these respondents made a distinction between daytime nuisance-biting culicines from the nighttime malaria causing anophelines. They were also unable to specify which particular mosquito caused malaria, either by "name" (in local terms) or by description in terms of size and color. Another 24% said that the mosquitoes that caused malaria were altogether "different" (not the ones commonly seen), but did not elaborate on this further. Five percent specified that mosquitoes breed in dirty water and when they bite a person, they inject the dirt into the human body, and the person "develops" malaria. While 5% mentioned the stench of rotting garbage as a cause for malaria, 4% spoke of air and industrial pollution to be one of the causes. Only 5% (all from Bombay) specified that malaria was caused by the bite of an *Anopheles*

²⁰ The explanatory model for a particular illness consists of (a) signs and symptoms by which the illness is recognized; (b) presumed causes of the illness; (c) recommended therapies; (d) the pathophysiology of the illness, and (e) prognosis (Kleinman 1980; p105).

mosquito, but these respondents were not specific about the other details of the malaria causing anopheles mosquito.²¹ Nine percent mentioned other reasons which included drinking polluted water, house flies, using each others dirty bedsheets, etc. Only a small percentage (3%) of the respondents were unsure about malaria is caused. Importantly, in ethnomedical terms, barring a few respondents, malaria was not associated with supernatural causes.

Some respondents in New Bombay believed that, while the mosquito was the most important causative agent for malaria, it was a question of "number of bites" that determined whether or not a person "developed" malaria. This was explained by Mr. Ankush, a 38 years old petty businessperson from Turbhe Store slum in New Bombay:

"There is no special mosquito that causes malaria. Any mosquito can cause malaria. There are *barik barik* (tiny tiny) mosquitoes. They breed in gutters. They sit on dirt and inject that *ghaan* (dirt) into our body. When they bite, we get *barik phodi* (small papules), and burning sensation. When 10-12 mosquitoes bite, and if we don't go to a doctor, we get malaria."

We found that the terms *ghaan* (in Marathi) and *gandagi* (in Hindi) were commonly used by the people of Bombay and New Bombay to suggest "what causes malaria." These terms were common in their everyday usage, and empirical referents of these terms were open gutters, stagnant water, exposed food, garbage, polluted air, etc. However, we could not clearly decipher the cause-effect relationship between malaria and *ghaan* that people saw. A closer examination of their explanations revealed that the respondents believed that there were multiple modes in which *ghaan* entered the body. Few respondents classified these modes of entry into direct and

²¹ As Coimbra noted in his study on malaria in the Brazilian Amazon, when lay persons use the term *Anopheles* to refer to the malaria causing mosquito, they may really not understand the role of *Anopheles* in the transmission of the disease, or that they can distinguish one kind of malaria from the other (Coimbra 1988; p256).

indirect ways. Direct entry was associated with mosquito bites alone. Mosquitoes breed in dirt, and their bite results in the entry of dirt into the human body, and this dirt becomes a cause for malaria. However, whether "entry of dirt" was understood as synonymous to entry of germs into the body was not sufficiently clear. Indirect modes of entry were associated with eating food items exposed to dirt or flies, drinking dirty water, and breathing polluted air. Nevertheless, there was an element of doubt included in the responses, in that people attributed much of their knowledge to "hearsay" and seemed open to other alternate explanatory models.

"Blaming the other" social group was also a common theme in the lay etiology of malaria. We found that the wealthy people in Bombay blamed the slum dwellers and "unhygienic" servants living in their quarters as being responsible for the intensity of malaria in the neighborhood. Mrs. Sharada, a 50 years old homemaker from Colaba in A ward, Bombay articulated such sentiments in the following words:

"There is no point in maintaining cleanliness within our house and family. Even the servant's cleanliness is important. They don't maintain cleanliness and throw their garbage and refuse right outside their rooms. Their bathrooms and toilets are usually choked, and water stagnates outside...How will mosquitoes stop breeding if there is so much garbage and stagnant water around? Malaria will continue to harass us as long as there is no cleanliness in and around this housing complex."²²

In New Bombay, the natives of villages blamed the migrants who lived in their villages as tenants as well as the local development body CIDCO for "bringing" malaria into their neighborhood - migrants because of their "unhygienic" lifestyle and CIDCO because of its inefficiency (uncovered drains and poor garbage disposal facilities).

²² We were told that women from this housing complex had come together "to do something" about educating their servants on aspects of personal and environmental hygiene, but the initiative and enthusiasm was only short-lived.

For instance, Mr. Pandurang, a 34 years old casual laborer from Koperkhairane, Sector area, explained why he believed CIDCO was mainly responsible for all the malaria in his neighborhood.

"CIDCO has allotted houses to people, but some houses/rooms have not been occupied. So the people from these houses throw their garbage/refuse in those unoccupied houses. Some people throw their garbage/refuse close to their homes, because the dustbin is far away. CIDCO must be blamed for keeping it (the dustbin) so far away from our homes, and also for keeping so many houses/rooms empty. Grass has grow inside those empty houses/rooms, and they provide an ideal place for mosquitoes to breed/rest and to give us malaria."

As noted earlier, peculiar to the residents of Turbhe Ward and Koperkhairane Ward in New Bombay was a belief that malaria had something to do with the increasing industrial pollution - with scores of chemical factories in the area that were releasing obnoxious gases and air pollutants and deteriorating the environment. Mr. Singh, a 20 year old youth from Mhape slum explained:

"We are surrounded by chemical companies from all four sides. The air is polluted, the environment is dirty, and there are so many mosquitoes. The pollution from the chemical companies affects our *sahan shakti* (overall health), and our resistance is lowered, because of which "malaria catches us" more easily. Once it (malaria) catches us, it will not go away for the whole year."

Most of the respondents in Bombay and New Bombay believed that mosquitoes were a cause for malaria, although a few could not figure out why is was that malaria affected only certain people and others were exempted from its misery. For instance, Mrs. Jaishree, a 24 years old homemaker from Shivaji Nagar slum in New Bombay expressed her doubts:

"There are so many people who get regularly bitten by mosquitoes, but they don't get malaria. They sleep in the open, they eat anything (meaning stale/exposed food), they don't use "GoodKnight", and yet they don't get malaria. We (my family) are so cautious, maintain cleanliness, eat good food, protect our children without caring for our own life, but still we get malaria. How am I to explain that?"

Significantly, although mosquitoes occupied an important place in the etiological models of most of the respondents in Bombay and New Bombay, their knowledge of breeding sites of malaria mosquitoes (*anopheles*) was inconsistent with the entomological facts, and residents' knowledge about them was limited. Very few could differentiate between the different types of diseases that are transmitted by mosquitoes (e.g. dengue, filaria), and also very few could specify the different breeding sites of malaria mosquitoes and nonmalaria culicines. Typically, in terms of the local ethnoentomology, mosquitoes were distinguishable in terms of size, color, and the sounds they made, but their breeding sites were invariant - gutters, filth, dirty stagnant water, and blocked drains, etc., but not fresh water collections such as wells and cisterns. In the entire research, we came across only one respondent who asserted that mosquitoes also breed in fresh, unpolluted water. This respondent was from Lower Parel (F/S Ward) in Bombay.

Mrs. Neelam, a 38 years old homemaker who lived with her husband, a businessman, and her mother-in-law, and four children explained:

"I know that mosquitoes cause malaria, and they can breed in *meeta pani* (sweet water - unpolluted). The doctor has told me that mosquitoes don't breed only in the gutters or in dirty water. The overhead tank in this building was leaking, so I told the President of the building society to do something about it, because mosquitoes were breeding in the stagnant water [accumulated leakage water]. No one paid any attention to my pleas. People in this building hang flower pots outside their balcony and pour water on the plants. The water drips and accumulates on the ground floor, where mosquitoes breed. I have requested so many families in this building to keep their flower pots inside their homes, but they have not heeded to my repeated appeals. So far only one gentleman has responded to my request. He has moved his plants and pots on to the terrace."

Viewed from an appropriate health education strategy as part of urban malaria control, it would be imperative that people should know where the "real" malaria carrying mosquitoes breed.

However, we documented an instance of how a message which suggested that mosquitoes also breed in unpolluted water got misinterpreted. During a FGD session in New Bombay a discussant said:

"Naiksaheb (a local politician) had come to this slum last month to give his speech. He told us about the malaria problem in New Bombay, and advised us to keep the water in the house clean, because mosquitoes also sit on clean water. He advised us to keep our water pots covered with a lid, so that mosquitoes don't enter the pot. [We believe that] if we drink clean water that is kept open, and on which mosquitoes have sat (and have released *ghaan* into the water), we will get malaria." (Mhape slum FGD - Men's Group).

Lay Perceptions about Types of Malaria

We asked our respondents to specify different types of malarias (*vivax*, *falciparum*, etc.) they knew by name to describe them according to their knowledge/local taxonomy. Significantly, majority (67%) of the respondents could not specify different types of malarias (as labeled in entomology or biomedicine). Out of those who spoke of different types (131), (N=204*) 6% mentioned *falciparum* malaria, 4% *vivax* malaria, and others (38%) identified a type of malaria that was signified by a *gaat* (knot - enlarged spleen), 26% mentioned malaria that went into the head (*falciparum*/cerebral malaria), and 12% mentioned one that was either accompanied or followed by jaundice (*kavil* hepatitis). Similarly, 5% identified a type of malaria that was either accompanied or followed by "typhoid." The remaining 8% gave descriptions of a wide range of malarias.

Lay Perceptions about Types of Mosquitoes

To gain some insights into the ethnoentomology of the local people, we asked all our respondents who had mentioned that mosquitoes were either the cause for malaria or had something to do

with the illness, to elaborate on the types of mosquitoes they knew. Excluding 18 respondents who had not mentioned that mosquitoes had something to do with malaria, (N=530*) 37% spoke of "big fat mosquitoes," 24% knew of "small, thin and tiny" mosquitoes, 10% knew of "black mosquitoes," 3% distinguished mosquitoes by their "long pointed legs," another 2% mentioned that they knew of mosquitoes that had needle sharp pointed snouts. A few others (2%) spoke of adult mosquitoes that made *goon goon* sound when they hovered around the ears, and 3% more said that there were "malaria causing mosquitoes" and others that did not. Nine percent of the respondents made a distinction between "big" mosquitoes (*das*) and "small" mosquitoes (*machar*), and the remaining 8% of the respondents who associated malaria with mosquitoes, were unable to specify different types of mosquitoes.

Mrs. Shoba, a 28 years old homemaker from the Chandivali quarry area in Bombay, compared the mosquitoes of today with the ones she was familiar with as recently as 5 years ago. According to her observation:

"In the early days, mosquitoes were small and white in color, and they would rarely bite. The mosquitoes of today are big and have "thorns" on their body, and when they bite, we get very angry. When these mosquitoes bite for three or four days continuously, one is sure to get malaria."

In New Bombay, Mr. Krishna , a 66 years old gentleman from the Turbhe Node, New Bombay, compared the mosquitoes of today with those of yesteryears. He said:

"These days mosquitoes are big...in my childhood, we knew only of two types of mosquitoes...one that sat straight, and the other that sat *tirka* [at an angle]...we have studied that the one that sits at an angle is the malaria mosquito...these days mosquitoes are *jaad* [fat/thick]...in those days, when we used to kill mosquitoes, they used to get crushed easily, but today's mosquitoes, even if we hit them, they don't get crushed...Not only that, in those days the mosquitoes were so fragile that

when we used to kill them with our hands, we wouldn't even realize that the mosquito had been crushed [i.e. they left little trace of their mass]...but these mosquitoes [of today], even if we crush them, we can still feel them in our palm."

Lay Perceptions about Mosquito Biting Behavior

Having elicited information on the types of mosquitoes they knew, we asked our respondents to describe the biting behavior of mosquitoes. Most of the respondents (N=556*), 33% said that mosquitoes bite during the day and also during the evening hours and in the night. Seventeen percent said that mosquitoes bite only during the evening hours and at night. Other respondents spoke of what it felt like when mosquitoes bite - 22% said that the bite of a mosquito results in a *gandhi* (papule), 14% said it results in a burning sensation (*aag aag hote*) and itching (*khaz/khujli*), and another 14% compared mosquito bites with the prick of an injection needle.

Lay Interpretation of How Malaria Gets Transmitted

Following the question "What causes malaria?", we asked our respondents to explain how malaria gets transmitted from one person to another. Eleven percent of the respondents believed that malaria was not a disease that could be transmitted from one person to another. Of the 89% of the respondents who believed that malaria was "transmittable," (a few of whom suggested multiple modes of transmission), (N=383*), 39% believed that malaria was not "contagious," in that it did not spread from one person to another merely by contagion, but instead it spread from one person to another by an independent mode, mosquitoes, etc.

Several respondents, particularly from the slums and villages of New Bombay, believed that malaria was transmitted from one person to another by means of a healthy person inhaling the

vaas (smell) of an infected person, or more specifically *eka mikanchya sahavasat rahun* or *eka mikanchya vasa mule* (by way of inhaling each others smell/body odor/breath, etc.). According to 39% of the respondents (3/4th from New Bombay), if a person contracted malaria, it gets transmitted from the infected person to another person who comes in close contact with him/her by way of transference of the infected person's *uob* (body warmth)"smell" "sweat" broadly connoted by the term *vaasamule* (because of smell). This transference may be occasioned by "sleeping with the infected person" (an infected mother could transfer her malaria to her infant/child by sleeping with the baby or holding the baby close to her), by way of vomit (inhaling the noxious odor), and sharing clothes/towels, plates, drinking glasses with the malarious person. For instance, according to Mrs. Patel, a 30 years old homemaker from Malabar Hill (D Ward):

"[Besides mosquitoes] One can also get malaria by being or sleeping too close to a malaria patient. For example, when my daughter had malaria, I used to sleep with her, and then I too developed fever and severe headache which later the doctor said was malaria."

We also came across instances where there was a conflation of ideas among some respondents regarding the "causes" of malaria and its mode of "transmission." For instance, in New Bombay, Mrs. Sangeeta, a 25 years old homemaker from Mhape slum said:

"When a mosquito bites a malaria patient, and then goes and bites a healthy person, that person will get malaria.²³ But it can also be transmitted from one person to another by way of using each others bedsheets/pullovers, towels, plates, etc."

Twenty-eight percent of the respondents believed that malaria was transmitted from one person to another by the bite of a mosquito (unspecified) - mosquito bites an infected person and then bites

²³ Unfortunately, we did not explore whether those who believed that mosquitoes caused malaria also held some concept of "incubation period," in that, how long it took for a healthy person to develop malaria after he/she had been bitten by a (malaria carrying) mosquito.

a healthy person who eventually gets malaria.²⁴ Similarly, 8% of the respondents mentioned that sharing/eating the food/water tasted (*usta/juta*) by an infected person will result in malaria in the healthy person. Less than 2% believed that malaria could be transmitted from the mother to her baby through breast milk. Significantly, 21% of the respondents, who believed that malaria was "transmittable," were either unsure or could not articulate how exactly it got transmitted from one person to another.

Perceived Vulnerability about Malaria

Do people who live in malaria endemic areas believe that certain categories of individuals - the young, the old, women, men, or children and infants are more vulnerable to contracting malaria, and were therefore afforded more protection? We raised this question with our respondents by asking them : "Who in your family do you think is more vulnerable or prone to getting malaria and why? Going by the existing epidemiological evidence, we had believed that people would suggest infants, children and pregnant women as being more vulnerable to malaria and its consequences. However, barring two respondents who said that children were more vulnerable to contracting malaria, all the other respondents, regardless of their socioeconomic status, said that malaria could happen to anyone, regardless of age or sex. However, in terms of "degrees of vulnerability," a consensus emerged that the constitutionally and nutritionally weak were more vulnerable. Again, this "weakness" has little to do with the age or sex of individuals.

²⁴ A few of these respondents also mentioned modes of transmission other than the bite of an infected mosquito.

Vulnerability emerged as a gender issue when we probed the question with a women's group in a slum locale in New Bombay. One of the discussants remarked:

"Women are more vulnerable³ to getting malaria because they don't get enough rest. They have to do all the work at home." (Mhape slum FGD - Women's Group).

When we broached the same issue with the menfolk of the same slum, the responses we received were quite the opposite. According to one discussant:

"In this slum, only 20% of the womenfolk have to go out and work, and return in the evening to attend to the household chores. The remaining 80% of the womenfolk finish their work by 10.30 a.m. and either sit gossiping and idling away their time or sleep the whole day until their men folk arrive in the evening from work." (Mhape slum FGD - Men's Group)

In summary, this section discussed the understanding of people in Bombay and New Bombay regarding malaria, specifically its etiology. Except for A and D wards in Bombay, most of the respondents from the other research sites believed that malaria was a very common illness in their neighborhood, and that its intensity had significantly increased during the past two years. People were remarkably familiar with the typical symptoms of malaria and were able to make a distinction between malarial fever and other illnesses complicated by fever. Explanatory models of the people of Bombay and New Bombay about malaria incorporated mosquito as a causative agent, but they did not make a distinction between the day-time biting culex mosquitoes (nuisance) from night-time biting anopheles mosquitoes. Equally important were other factors in their explanatory models such as general environmental degradation, accumulation of garbage and blocked drains. People attributed the cause of malaria to the persistence of mosquito breeding sites - often represented by accumulated garbage and blocked drains. They also blamed other social groups for bringing malaria into their neighborhood. While the wealthy people in Bombay blamed the slum

dwellers and "unhygienic" servants, the natives of villages in New Bombay blamed the migrants and CIDCO for its inefficiency. In New Bombay in particular, people believed that malaria was transmitted from one person to another by means of a healthy person inhaling the *vaas* (smell/body odor/breath) of an infected person. Importantly, regardless of their socioeconomic status, most of the respondents believed that no one was particularly vulnerable to getting malaria - in that anyone could get malaria regardless of age or sex. However, in terms of "degrees of vulnerability," they believed that those who were constitutionally and nutritionally weak were more vulnerable, but this "weakness" has little to do with the age or sex of individuals.

Section II

Illness Management - Past Experience Versus Current Experience with Malaria

To understand the existing cultural models of malaria in Bombay and New Bombay, we documented the illness stories of our respondents through which they told us how they had negotiated the symptoms and coped with different episodes of malaria.²⁵ In highlighting the significance of illness stories, Garro (1994) notes:

"As persons talk about their experiences, past events are reconstructed in a manner congruent with current understandings; the present is explained with reference to the reconstructed past; and both are used to generate expectations about the future...Cultural models are schemas which are generally shared in a particular setting. Cultural models for illness in general as well as shared understandings about specific illness conditions (e.g. cancer, high blood pressure) help individuals make sense of given episodes of illness and provide the basis for actions taken in response to illness...Whether individual or shared, schemas are not static; they are created through experiences and are modified by new experiences." (Garro 1994; p776; see also Mattingly and Garro 1994).

²⁵ Majority of the respondents whom we interviewed were from households that had experienced multiple episodes involving either a single person or several household members often simultaneously.

To begin with, we asked our respondents to list out the names of all those in the household who had "fever" during a six months recall period prior to the interview. We then asked them to recount their experiences (in as much detail as possible) with all the febrile cases in the household that they could remember. We also asked them to provide all possible details about any particular episode that they most vividly remember.²⁶ Data thus obtained were later classified into "past experience" - limited to two episodes during a six months recall period, and "most current experience" - limited to two episodes during a two months prior to the interview. For reasons of convenience, in the analysis, the recounted "past experience" febrile case has been termed "recalled case" and the "most current experience" case as the "index case." Data on past experience with febrile illness/malaria were elicited to explore the ways in which previous experience in dealing with an episode influences how a fresh episode is handled. In the following pages, data pertaining to the "recalled case" have been briefly discussed, followed by a detailed discussion on the "index case" including excerpts from recorded illness narratives which throw into sharp relief aspects of cultural knowledge and cultural expectations.²⁷

Ordinary Fever and Malarial Fever Episodes (6 months recall period)

The data revealed that in the sample of 400 households, as many as 1778 persons had experienced at least one fever episode (including fevers labeled as malarial fever) during a six months recall period prior to the interview. A total of 1866 fever episodes experienced by 709 persons were

²⁶ When this question was framed, we were fully aware of the problems and limitations of keeping a recall period of 6 months. We did not rule out the possibility that given the problem of "memory lapse" several episodes might get precluded.

²⁷ It may be noted that while most of the passages incorporated in this section are representative of the "typical" observations, a few other are idiosyncratic and situational instances that we documented.

recalled in some detail by the respondents from households with at least one past experience with malaria - suspected or confirmed with a blood smear. Of these, 60% were labeled as malaria or suspected malaria either by the respondent, significant others in the household, or a practitioner from whom treatment was sought.²⁸ In 35% of the 400 households, this was the first time that someone in the household had contracted malaria (up to the point of the interview) - 48.5% in Bombay and 22% in New Bombay. The proportion of households with at least one previous experience with malaria was significantly higher in New Bombay (78%) as compared to Bombay (52%) (see table 4.3). Moreover, household in slums, villages and nodes had experienced malaria earlier at least once as compared to households living in apartment blocks/building complexes (see table 4.4). Similarly, the proportion of households with previous experience with malaria was significantly higher in Chandivali (in Bombay), and all the four wards in New Bombay as compared to the A, D, and F/S wards in Bombay (see table 4.5).

Table 4.3

Table 4.3 showing (in percentages) whether the sample households in Bombay and New Bombay had experienced malaria for the first time.

WHETHER FIRST CASE OF MALARIA	City	
	BOMBAY	NEW BOMBAY
Yes	48.5	22
No	51.5	78
Total % (N)	100 (200)	100 (200)

²⁸ The process of negotiating illness identity and illness labeling has been discussed later in the chapter.

Table 4.4

Table 4.4 showing (in percentages) whether the sample households in the different locales had experienced malaria for the first time.

Locales

WHETHER FIRST CASE OF MALARIA	SLUM	VILLAGE	NODE	APARTMENTS /BUILDING COMPLEXES
Yes	29	17	20	56
No	71	83	80	44
Total % (N)	100 (120)	100 (71)	100 (64)	100 (145)

Table 4.5

Table 4.5 showing (in percentages) whether the sample households in the different municipal wards of Bombay and New Bombay had experienced malaria for the first time.

Bombay**New Bombay**

WHETHER FIRST CASE OF MALARIA	A WARD	D WARD	F/S WARD	CHANDI VALI	BELAPUR	NERUL	TURBHE	KOPERK HAIRANE
Yes	48	58	64	24	20	28	36	4
No	52	42	36	76	80	72	64	96
Total % (N)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)

How the Illness Was Managed (Recalled Case)

All the 260 respondents²⁹ who recounted their experience with a malarial episode in the household were asked to elaborate on how a particular person's illness was managed - who was affected,

²⁹ As noted above, in 35% (140) of the households, this was the first time that someone in the family had experienced malaria. These were excluded from questions pertaining to past experience with malaria.

number of episodes, and various aspects of treatment seeking behavior including patterns of resort, and money spent on treatment, etc.³⁰ The data revealed that 70% of the recalled cases were treated by a private practitioner at a clinic or at a private nursing home/hospital. In 10% of the cases, treatment was sought from a municipal dispensary or a malaria surveillance worker, and in 8% of the cases, treatment was taken at a government dispensary including a PHC. Another 5% cases were treated both by a private practitioner and a municipal doctor. In 2% of the cases, treatment was sought at a private practitioner's clinic, a government dispensary and a PHC. The remaining 5% respondents could not recall or tell where exactly the affected person was treated.

Several respondents vividly recalled their own experience with malaria. A few others spoke of the illness episode they remembered of a family member. The ensuing passages from the narratives of some of the respondents (recalled case) from Bombay and New Bombay highlight different dimensions of how people interpret and respond to febrile illnesses that often get labeled as malaria.³¹ The first two cases highlight the issue of lay perceptions of medicine compatibility, and financial consequences of delay in seeking treatment from the professional sector.

Mrs. Sushila, a 22 years old homemaker from the Chandivali quarry area described her experience in the following words:

³⁰ Data pertaining to waiting period before seeking treatment, patterns of resort, money spent on treatment, etc, were elicited from the respondents. However, given the problems of recall associated with such data, we decided to preclude them from analysis, and to focus on a detailed discussion on the data pertaining to the various dimensions of illness management with reference to the index case. The problem of recalling episodes was complicated by the fact that in several households, there was more than one person who had experienced multiple episodes of "malaria."

³¹ Narratives communicate situation knowledge and causal notions. They also dramatically communicate the narrator's feelings and purposes in the situation they describe (Price 1987, p330).

"Last year I had developed high fever with shivering and severe headache. So I took one "Anacin" (antipyretic) and later one Saridon (paracetamol). I was two months pregnant then. Immediately, I had an abortion. It was late in the night. They [neighbors] sent for my husband and rushed me to a hospital in Andheri. I was admitted just for one day. My husband had to pay 2000 Rs just for one night in that hospital. The doctor said: "If you had delayed coming here even by an hour, you would have been dead." I had malaria again six months ago. I used to get high fever and shivering, and also headache and severe stomachache. Then I was three months pregnant. The malaria worker had asked me whether I was pregnant, and had taken a sample of my blood, but he did not come back to give me tablets. He told me that since I was pregnant, he will not give me malaria tablets. So I was admitted to a private hospital for one day. There they gave me medicines and saline. I became all right for a few days, but now I have got it again."³²

Mrs. Lalita, a 22 years old homemaker from the Mhape slum in New Bombay narrated her experience with taking an antimalarial when she was pregnant:

"I had malaria last year. The municipal worker had taken my blood for checking. He had given me malaria tablets - 5 tablets - one white tablet, one red and one yellow, 2 at a time. I ate those tablets, and after two days I had *garbhapath* (spontaneous abortion). Since then, *majhya angavarun pani jaate* (literally water goes over my body - meaning I have leucorrhoea)."

In Mrs. Sushila's case, there is every likelihood that her spontaneous abortion might have been the result of the bodily conditions precipitated by her malaria infection. In her explanatory model,³³ however, it was the antipyretics that she had consumed that resulted in her abortion. Furthermore, she believed that reluctance on part of the malaria worker to give her the antimalaria tablets had left her with no choice but to seek treatment at a private hospital, which turned out to be an expensive matter. In Mrs. Lalitha's case too, her abortion might have resulted from the conditions precipitated by her malaria infection, and her leucorrhoea was probably an indication of her state

³² Sushila's case is one of the several examples that we encountered during the research, where what had begun as an ordeal several months ago, was still continuing either in the form of intermittent fever episodes or an outright case of "relapse malaria."

³³ Individuals are likely to have quite vague and indefinite models of explanations for their illness, depending on past experiences of the patient and her or his circle of kin and friends (Kleinman 1980, p105-7)

of malnutrition, but in her explanatory model, her health problems had resulted from consuming the malaria worker's tablets.

The following case shows how complicated therapy management in the event of malaria can get even in households that have access to good health care facilities, and the resources to pay for the treatment. Mrs. Jaiwanti from Parel in Bombay, a 50 years old homemaker lived with her husband - a mill worker, and three grownup children. She had contracted malaria the first time three months prior to the interview, and her ordeal was continuing. She narrated:

"This was three months ago. First I had fever with shivering. I took Crocin and kept cold water *patti* (tepid water sponging) on my forehead. Then the fever shot up to 104 (F). I went to the municipal dispensary and got my blood tested. The report came negative for malaria. Then I went to Dr. Kulkarni. He gave me tablets for 6 days - 3+2+3. I vomited. Then again I had very high fever. I was admitted to K.E.M. Hospital. There they gave one saline and tablets for eight days (Quinine - 600 mg one tablet three times a day, Doxy - 100 mg one tablet twice a day, Rantac 50 mg injection and Gelusil 4+2+2).³⁴ They told me that I had *falciparum* type of malaria. I became all right, but I developed fever again. This time I went to Dr. Gadgil who is our family doctor. He recommended me to Dr. Chiklikar, who is a specialist. He advised me to get my blood tested at Vaidhya Laboratory. Something [diagnosis] came out in that report. Dr. Chiklikar gave me tablets for two days - 3-3-3, and I started vomiting. They did one more blood test, and the report was negative. Now I feel very weak. I have lost my appetite. I cannot even pull my sewing machine. I cannot even talk for long, nor can I stand for too long. I get headache, bodyache, and if I do some running around, I begin to sweat. Dr. Chiklikar has told me to get admitted again in the K.E.M. Hospital. Meanwhile, he has given me five injections within two days, and has taken my blood sample three times for testing. Now he has given me tablets 4+3+3. After I took these tablets, I started getting *goon goon* (tinitinus) in the ear, and my vision was also affected. The doctor would ask me whether I experienced the *goon goon* sound and whether I had started seeing things differently because my vision was affected. He said these side-effects were normal. After a few days, all these problems stopped."

³⁴ We noted the names of medicines, schedule and dosage from the respondent's prescription.

Mrs. Jaiwanti's condition is typical of recalcitrant malaria. Her narration encodes several important issues - first, the details she provides about the steps she went through in search of therapy reveals the vast amount of cultural knowledge she had with her about the type of treatments and health specialists in her local health arena. Second, she expresses a sense of desperation characteristic of a person affected with refractory malaria, and third, her narration conveys the idea of how a person with all the resources at hand moves from one sector of health care to another in search of cure - municipal dispensary/hospital, private practitioners, specialists etc. Above all, Mrs. Jaiwanti also communicates her degree of sensitivity to some of the side effects of malaria therapy - protracted weakness and tinitus associated with quinine therapy.

The following case highlights the problems of the poor from New Bombay with respect to interaction with government health facilities, and the prevalent notion about the deteriorating quality of health care provided at the local primary health center. Ratan, a 25 years old ragpicker who lived in a slum along the railway tracks in Belapur, New Bombay along with her husband and three children, narrated her tribulations with repeated episodes of malaria:

"I have had this *malariachi gaat* (enlarged spleen) in my stomach for the past six months. Each time the *gaat* becomes big, fever starts. The doctor has told me to take these tablets to reduce the *gaat*. Again when the *gaat* becomes big, I go to the doctor. Right now I have malaria. I had been to the government hospital (PHC). There the sister (nurse) asked me to put saline. They take 60 Rs for each saline. The sister asked me to pay 60 Rs in advance. I did not have that much money so I returned home. Earlier they used to give salines and medicine at the PHC free of cost. When Dr. D. was the doctor at the PHC, he would admit us even late in the night. But now, this doctor does not admit us if we go after six o' clock. If we go there, they (the PHC staff) always tell us to come the next day or after two days, saying "we have closed the PHC for today."

Ratan's narration highlights two pertinent issues - first, symptom sensitivity - recognition of a *gaat* (an enlarged spleen) as a symptom of chronic malaria, and second, encoding of cultural expectations regarding the behavior of the health staff - a common concern among the poor in New Bombay that things were getting bad as far as the quality of the public health system was concerned. The staff at the local PHC were perceived as "unsympathetic" "corrupt" and "extortionists" - a cultural model that will emerge repeatedly later in the chapter.

Symptom Recognition and Symptom Sensitivity (Index Case)

During an illness episode, family members commonly engage in verbal interactions to negotiate the identity of the illness and to label it. The process of communication that occurs among family members during such episodes significantly influences the ways in which individuals refine cultural models of illness (Price 1987). Importantly, delay or failure to recognize the characteristic symptoms of malaria often results in complicated outcomes. Therefore, viewed from a practical perspective, to design an appropriate malaria intervention program, it is important that the household process of recognition, care seeking and household treatments be adequately understood and addressed (Chand and Bhattacharyya, 1994, p395). As Good states:

The meaning of a disease category cannot be understood simply as a set of defining symptoms. It is rather a 'syndrome' of typical experiences, a set of words, experiences, and feelings which typically 'run together' for the members of a society. Such a syndrome is not merely a reflection of symptoms linked with each other in natural reality, but a set of experiences associated through networks of meaning and social interaction in a society (Good 1977, p27).

To document how a recent episode of malaria was managed, we asked all our respondents to consider the most recent case of "malaria" in the household (index case - two months recall

period) and to narrate their experience with the episode(s) by providing all possible details. Of the index cases narrated by the 400 respondents, 30% were adults and 70% were children. To begin with, respondents were asked - "What³⁵ were the symptoms and who noticed them first?" (see Table 4.6).

Table 4.6

Table 4.6 showing the list of symptoms that the people of Bombay and New Bombay typically associated with malaria, and whether each symptom was noticed/experienced in the most recent malarial/suspected malarial case (Index Case).

SYMPTOM ^{35 36}	NOTICED/EXPERIENCED
Fever	92%
Shivering	72%
Severe headache	53%
Vomiting	49%
Bodyache	34%
Weakness	20%
Nausea/anorexia	16%
Giddiness/dizziness	10%
Cough and Cold	9%
Jointpains	6%
Loose motions	5%
No taste in mouth	5%
Stomachpain	5%
Irritability	2%
Convulsions	2%
<i>Suchat nohata</i> (Loss of presence of mind)	2%

³⁵ The initial appearance of symptoms of malaria usually occurs 10-15 days after the bite by the infected mosquito. The most pronounced clinical manifestations of malaria are paroxysms of chills and fever reaching 41 degree C and lasting for 6 hours followed by sweating and deffervescence, and accompanied by frontal headache, myalgia, malaise, nausea, anorexia, and abdominal pain. Vomiting may also develop and can be quite intense. Fever may persist for several days before the typical periodicity develops (see Katz et al. 1982; p158 and Bruce-Chwatt 1987; p81).

³⁶ All the symptoms inventoried in Table 4.6 were based on what the respondents had mentioned to us. We had taken care not to prompt the respondents in recalling the symptoms by way of suggesting symptom labels.

In 58% of the cases, it was the respondent who had first noticed the symptoms, and in 40% of the cases it was the patient's mother, and in remaining 2% percent of the cases, it was either the father, wife, or husband. Upon noticing the symptoms, (N=449*) 45% of the patients had taken a paracetamol, 19% had gone directly to a doctor. Sixteen percent had put a *patti* (folded cloth dipped in salt/cold water) on the forehead of the patient to bring down the temperature, 6% had applied "Vicks Vaporub" and 3% had "done nothing".³⁷

Labeling the Symptom Sets as Malaria

In 65% of the cases, the symptom sets were labeled as "malaria" by a doctor - private practitioner or government/municipal doctor. As many as 34% of the respondents diagnosed/ labeled the illness as malaria on their own after considering the "typical" symptoms - fever with shivering, bodyache, headache, vomiting, and stomachache. Only in 1% of the cases, it was the malaria surveillance worker who had diagnosed/labeled the illness as malaria. Apparently, in these cases, the malaria surveillance worker had given presumptive treatment to the fever patient even before the patient had decided to do something to deal with the symptoms.³⁸

As Chand and Bhattacharyya remind us:

Conceptual models of illness are not rigid. They are reproduced as well as continually shaped by diagnostic and treatment actions. Illnesses are rarely defined by the presence of one symptom, but rather are negotiated on the basis of a configuration of symptoms and events (Chand and Bhattacharyya 1994, p398).

³⁷ Details about the first two episodes (wherever relevant) were elicited, but for reasons of brevity, details about only the first episode have been discussed. However, it may be noted that the trends with respect to various aspects of treatment seeking behavior in the second episode were not significantly different from those noted for the first episode.

³⁸ Given the problems of accuracy in reporting that we had encountered during the pretesting phase, we did not explore how much time had lapsed between symptom recognition and the labeling process.

Table 4. 7

Table 4.7 showing (in percentages) who had diagnosed the symptom sets as malaria in Bombay and New Bombay.

City

WHO DECIDED IT WAS MALARIA	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
Doctor*	70	61	65
Self-Diagnosis	30	38	34
Malaria Worker	-	1	1
Total% (N)	100% (200)	100% (200)	100% (400)

* Includes private practitioners and doctors at a government/municipal hospital/dispensary, primary health center.

Table 4.8

Table 4.8 showing (in percentages) who had diagnosed the symptom sets as malaria in different locales in Bombay and New Bombay.

Locales

WHO DECIDED IT WAS MALARIA	SLUM	VILLAGE	NODE	APARTMENTS /BUILDING COMPLEXES	BOTH CITIES COMBINED
Doctor*	67	63	55	69	65
Self-Diagnosis	33	36	42	31	34
Malaria Worker	-	1	3	-	1
Total% (N)	100% (120)	100% (71)	100% (64)	100% (145)	100% (400)

* Includes private practitioners and doctors at a government/municipal hospital/dispensary, primary health center.

As the data in table 4.7 and 4.8 show, in the majority of the cases, it was a doctor who had labeled the symptom sets as malaria, and in a significant number of case, malaria was self-diagnosed. Differences in this regard between the two cities and the different locales were

significant - with self-diagnosis in New Bombay, especially in the nodal areas being higher than in Bombay and other locales respectively. It is also apparent from the data that the malaria worker had played a negligible role in illness labeling - an indication of limited access that the local people had to a malaria worker during times of contingency.

Waiting Period Before Seeking Medical Help

Beyond the use of a home remedy or self-medication with an over-the-counter drug (antipyretic), we asked our respondents to specify how long they had waited after noticing a set of symptoms before they decided to take the patient (including self) to a source of treatment outside the home, or draw the attention of a malaria worker. In most cases (41%), professional help was sought the "next day," and in 24% of the cases it was sought within 4-5 hours after a set of symptoms (typically high fever and shivering) were noticed. In 18% of the cases, help was sought "immediately," and in 17% of the cases, help was sought after two days or more. We had held that those households with past experience with malaria were more likely to seek prompt medical treatment as compared to those who had experienced the symptoms for the first time. However, as the data in table 4.9 reveal, the difference between households with past experience and those without was not significant in terms of promptness of seeking medical help. In this case, symptom sensitivity may probably not have been the primary factor that influenced their decision to take the patient to a source of care outside home. The influence of economic factors and accessibility of health care might have been more important.

Table 4.9

Table 4.9 showing (in percentages) whether this was the first time the household had experienced an episode of malaria, and promptness of seeking treatment from the professional sector.

Whether First Time Episode in Household

HOW IMMEDIATELY PATIENT WAS TAKEN TO DOCTOR	YES	NO
Immediately upon noticing symptoms	20	17
After 4-5 hours	24	24
Next day	38	44
After two days or more	18	15
Total %	100	100
N=	141	259

Source of Treatment Outside the Home (First Episode)

The majority of the index case in Bombay and New Bombay were first treated by a private practitioner or at a private nursing home/hospital (see table 4.10). Municipal facilities or the malaria worker was among the least resorted facilities. Respondents gave multiple reasons to justify why they had chosen a particular source of care as the first resort. The majority (51%) had gone to go to a private practitioner because they had faith in the doctor's power to bring cure (*haat goon* - power of the hand). Others (28%) had gone to the doctor because he/she was a family physician, and the remaining had gone for other reasons - proximity (10%), doctor charged less fees and gave treatment on credit (10%), and because the doctor gave injections and I.V. drip saline (1%). Whereas, those who had sought treatment from a malaria worker or at a public health facility had done so either because they could not afford the treatment cost at a private practitioner's clinic, and/or because the worker had come to their door-step to give treatment.

Table 4.10

Table 4.10 showing (in percentages) the health facility utilized as first resort during the first episode of the Index Case in Bombay and New Bombay.

City

HEALTH FACILITY UTILIZED AS FIRST RESORT	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
Private practitioner	63	70	66
Municipal dispensary	15	8	11
PHC/CGHS/Railway dispensary	11	5	8
Municipal worker	5	6	6
Municipal/Government hospital	3	6	5
Private hospital	3	5	4
Total (N)	200	200	400

It may be note that the tendency of a very high proportion of people in Bombay and New Bombay to seek medical help from a private practitioner did not necessarily suggest that they wholeheartedly patronized private practitioners. Several respondents were highly critical of the practitioners in their neighborhood. Yet they utilized their services for lack of a better alternative - a municipal hospital or a dispensary that was in their vicinity and provided efficient services. This was particularly the case in New Bombay which was poorly served by the public health system. Many regarded private practitioners as typically incompassionate, greedy, exploitative, primarily interested in making money out of the peoples' sickness, and by and large inconsiderate toward the poor. Ms. Deepali, aged 22 years, who lived in Colaba, Bombay summed up her feelings about private practitioners in her neighborhood:

"The doctors never volunteer to tell us what causes malaria and how we get it. Why will they?! Obviously, they feel that if they tell us all about it, they will lose their business."

Negative sentiments about private practitioners were more strongly expressed by several respondents who were interviewed in New Bombay.

Mr. Ashok, a 28 years old youth from a village in New Bombay said:

"Doctors in New Bombay have become rich overnight by fleecing their patients. They put false degrees (qualifications) and *phavdac ghevun ale ahet itha, garibanche paise lootai la* (they have come here with a spade to dig up (grab) all the money they can from the poor people). They have purchased so much land in our village, but we cannot say anything to them. If a patient is unable to pay their bills, they tell the patient/patients family members "If you cannot pay, then you sell your blood." Dr. S. who practices in Turbhe slum tells his patients that he studied medicine in Russia, and got his medical degree from that country. I say, if he has studied in Russia, what is he doing in that poor slum?!"

A FGD discussant from the Mhape slum spoke of the "rags to riches" story of private practitioners of his slum.

"Two years ago, doctors in this area would come on foot to their clinics. Now after the rains (malaria season) each one has bought a Maruthi car (an expensive car)."³⁹ (Mhape slum FGD - Women's Group).

Yet another discussant from the same sum spoke of the unethical practices of private practitioners in New Bombay in the following words:

"There is cut-practice⁴⁰ going on in this place - if you go to any doctor in this area, he will predictably tell you that you have got malaria - and if you go to a pathologist, again, invariably the report will show malaria. If not anything, the doctor will tell you to get admitted in a hospital, where the first thing they will do is to put you on saline bottles and give you a minimum bill of 2,000 Rs, i.e., if you are lucky, or else you will have to shell out 7,000 to 8,000 Rs. Now, who has that kind of money?"

³⁹ We came across a popular joke that the poor people of New Bombay shared about the overnight prosperity of private practitioners, which they legitimately attributed to endemic malaria. With several practitioners having purchased a Maruthi 1000 car (a luxury car), the local people were convinced that the money for the expensive car had obviously come from the scores of malaria patients that the practitioners had been treating during the past few years. Therefore, the prestige car had been popularly dubbed as "Malaria 1000."

⁴⁰ A description of how this practice operates has been provided in the next chapter.

Complementing the above feelings, Mrs. Archana, 28 years of age old lady who lived in Belapur Node, New Bombay summed up the feelings of several other respondents in her locale:

"In this area, when a patient is admitted to a hospital, the doctor does not even wait for a minute. He will immediately tell the nurse to put a bottle of I.V. drip saline for the patient. The patient (and whoever is accompanying him) is in no state to refuse, so once he is pinned down because of the I.V. saline on his hand, he is forced to stay back, and ends having to pay a big bill."

As will be noted in the later sections of the chapter, concerns about the treatment cost at a private practitioner's clinic and its consequences on the family's resources, were recurrent themes in several of the narratives told by our respondents about their experiences with malaria.

Nature of Treatment Received (First Resort)

As for the mode/form of treatment received, majority of the patients in Bombay and New Bombay had received tablets and a significant percentage of them had received an injection, but only a small percentage were advised a blood tested or were given I.V. drip saline (see table 4.11).⁴¹ In terms of the combinations in which the treatment was given to the index patients, 38% were given only tablets, 32% were given a combination of tablets and injections, and 21% had received tablets and saline. The remaining 10% of the patients were given a combination of tablets, injection(s), I.V. drip saline, and a blood test was also advised. As suggested by the data in table 4.11, while tablets were more popular in Bombay, injections and salines were significantly more popular in New Bombay as part of anti-malaria therapy. Again, injections were more popular in

⁴¹Our empirical observations in New Bombay private practitioners' clinics conducted alongside the ethnographic interviews, had led us to believe that injections and I.V. drip salines were immensely popular among malaria patients in New Bombay. The data corroborated our hypothesis about the popularity of injections as part of anti-malaria therapy - both in Bombay and New Bombay, but the data did not indicate the high level of I.V. drip saline usage that we had anticipated.

slums (58%) and villages (55%) as compared to the nodal areas in New Bombay (39%) and apartments and building complexes in Bombay (16%) as revealed by their usage patterns in the index cases.

Table 4.11

Table 4.11 showing (in percentages) the modes of treatment the Index Cases had received in Bombay and New Bombay.

MODE OF TREATMENT RECEIVED	City	
	BOMBAY	NEW BOMBAY
Tablets	61	23
Injection	18	48
Saline	3	12
Blood Test	18	17
Total% (inclusive of combinations) N=	100 308	100 229

Side Effects Experienced

When asked whether the index case patient had experienced any noticeable side-effects as a result of the treatment that he or she had received (N=438*), interestingly 63% of the respondents said that there were no "side effects." It is quite possible that in many cases the typical side-effects of malaria drug therapy were either overlooked as being "normal" or were considered not worth reporting. As Etkin has pointed out:

"The interpretation of signs or symptoms is deeply embedded in cultural meanings of therapeutics and outcome, and patients and healers in the same society do not necessarily agree on what is primary and what is secondary to effective therapy. In some cases, what is deemed a side effect in biomedicine is embraced by another medical paradigm as a requisite part of a *process* in which the early outcomes indicate that therapy is under way, that the various constituent aspects (which may include diagnosis, prognosis, and resolution) are on course, and that the ultimate effect - full symptom remission - remains in sight (Etkin 1992; p 102).

The remaining reported side effects such as vomiting, feeling dizzy nausea, skin rash, stomach burn, dysentery, weakness, temporary loss of hearing, and itching (pruritus).

Outcome of Treatment

Following treatment at the first source outside the home, 52% of the patients had "felt better," and 18% were completely "cured" meaning that the symptoms had completely disappeared. In 28% of the cases, the symptoms continued to persist, and in 2% of these cases, the patient was admitted to a hospital.

Excluding those who were "completely cured", a few days later, 55% of the cases had to once again take treatment from a practitioner, and the remaining 45% had to take treatment from a malaria worker. After taking treatment from the second source, only 34% of the cases were "fully cured." The remaining patients were continuing with their treatment at the time of the interview, and two of the patients (relatives of the respondents) had died a few days prior to the interview.

Cost of Treatment

Expenses incurred on each malarial episode were elicited in detail. We asked our respondents to recall how much money they had spent during each of the two episodes, on specific items such as doctor's fees, medicines, blood tests, hospital fees, transportation, special diet, etc. Significantly, 19% of the respondents said that the treatment had not cost them any money, because most of the episodes were treated by the malaria worker free of cost. The others had spent as little as 2 Rs and as high as 10000 Rs on treatment of a single episode. The differences between households



from Bombay and New Bombay in terms of expenses on a malaria episode are revealed by the data in table 4.12.

Table 4.12

Table 4.12 showing (in percentages) the expenses incurred by households in Bombay and New Bombay on treatment of an episode of malaria.

Cities

EXPENSES INCURRED IN TREATMENT OF FIRST EPISODE (ALL INCLUSIVE)	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
No Expenses	26	11	19
2-50	15	30	22
51-100	14	13	14
101-300	14	25	20
301-1000	19	15	15
1001-10000	10	6	8
Don't Know	2	-	2
Total %	100	100	100
N=	200	200	400

The data revealed that the average doctor's fees (prescription and medicines included) was 70 Rs. in Bombay and 50 Rs in New Bombay. In 81% of the episodes, no expenses were incurred on a blood test, either because the blood test was not recommended or the blood was tested by a malaria worker. The average cost of a blood test in Bombay was 75 Rs, and in New Bombay it was 65 Rs. In 56% of the cases, no expenses were incurred by way of hospital fees and transportation because the patient was not hospitalized. On average, the cost of hospitalization in Bombay was 1000 Rs, and in New Bombay it was 2500 Rs.

When asked to elaborate on how they had managed to mobilize the money required for the treatment, majority (63%) of the respondents said that they had used their own savings. The

others had to borrow money from their friends, neighbors and relatives, while a few had to either pawn or sell their valuables to raise the money.⁴² Interestingly, 85% of the respondents asserted that the illness episode they had recounted had not resulted in any loss of earnings/wages. The remaining respondents said that they had lost between 30 Rs and 10000+ Rs during the illness - depending on their occupation or wage earning activity.

Nature of Disruption Caused by Malaria Episode(s)

To probe more into the question of what happens to people who contract malaria, we asked our respondents to specifically tell us about the nature of difficulties they had faced when they or someone in the household had malaria. Most of them mentioned more than one way in which the episode had seriously affected them and their everyday lives. Specifically, (N= 768*), *mansik tras/tanav* (mental tension and worry) was most commonly mentioned (24%). In 16% of the cases, the illness had thrown the everyday management of household chores in disarray. In 14% of the cases, the children had to miss out on school. In 12% of the cases, the patient or the family member could not go out to work, and another 12% said that they had to run “helter skelter” in search of a doctor, raising money for treatment and so forth. In 9% of the cases, a substantial portion of the household savings had to be diverted toward purchasing medicines, paying the doctors' fees and hospital charges. Commonly, people were compelled to borrow money either from relatives, neighbors or moneylenders. In 7% of the cases, the affected person had to go to work despite having fever and related health problems, because of monetary compulsions. In 5%

⁴² In telling us about how expensive it had been for them to treat the illness, several respondents narrowed down their cause for consternation to the money they had to pay their local private practitioner for the treatment

of the cases, family members could not fulfill their social obligations of visiting friends and relatives, and the children had to be left home alone and were compelled to eat outside (restaurant) food. Interestingly, 10% of the respondents said that the illnesses they had spoken about, had neither caused them any consternation worth mentioning, nor had it disrupted their everyday life in any significant way.

Descriptive accounts of the impact of illness were elicited in the form of illness stories which revealed the pain, suffering, and the nature of disruption that malaria had brought to bear on a patient and the family. Many narratives centered around the meanings that people attached to an episode of malaria, the economic consequences of the illness on the family, and a few others resonated issues pertaining to social and psychological distress, patient-practitioner dynamics and “doctor-switching” in the search for cure, etc. While some narratives highlighted specific dimensions such as the financial implications, others were about the multiple ways in which the illness had affected their lives. The following case highlights the economic hardships and related problems that a household has to go through because of multiple episodes of malaria.

Mr. Shrikant, 35 years of age, lived with his wife and four children in the Chandivali quarry area. He worked as a quarry worker and earned 1200 Rs per month. He had migrated to the quarry area a year ago along with his family from rural Maharashtra. Mr. Shrikant, his wife and two of their children recently had malaria. He narrated his personal encounter with malaria:

received. This was evident in their opinion about the local private practitioners as well as in their narrations about how they had managed the illness.

"First, I developed fever with shivering, I went to Dr. P. He gave me one injection and some tablets, for which I had to pay 75 Rs. When I came out of his clinic, I had a blackout. Darkness came in front of my eyes. So I took an autorickshaw and reached home. The fever came down, but it came back again after 8 days. I vomited. By then the malaria worker had come home and he took a sample of my blood and gave tablets. I took them and became all right. But I had become so weak, that I could not go to work for three months. My mother used to give me money. My employer also advanced me money, which he later deducted from my salary. Eventually, I had spent 1500 Rs on my illness. Around the same time, my wife also had malaria. She was admitted to a hospital. There they gave her 4 bottles of saline and some injections. She was all right for a few days. Her fever returned after 8 days. Because of all this financial hardship, we could not celebrate our Diwali festival this year. My brother-in-law had come to visit us. When he saw the miserable condition that we were in, he pawned his gold chain, sold his hut and gave us 3000 Rs as loan. I was bedridden for several days, and my wife had to do everything - all the household chores - even in her sickness. Now we are tired of this place. We don't want to stay here. We have decided to shift to Ghatkoper. Because of this malaria, I had a big fight with my sister. I said to her: "Why did you call me here?! Because of you, I had to fall sick. My wife and children have also suffered." Now, I am not on talking terms with my sister."

Mr. Shrikant's narrative highlights the multiple ramifications of malaria episodes in the family.

While Mr. Shrikant bringing forth the economic misfortunes and disruption that malaria had caused in his family life, he also transcends the topical focus and talks about extra-familial relationships and conflicts - the souring of his relationship with his sister whom he blamed for the travails that he and his family members had to face. Malaria was also an important factor in persuading him to think of moving out of Chandivali area, even at the cost of losing his job.

The next case presents a complex account of the diagnosis and treatment related issues that surround fevers that are labeled "malaria."

Mrs. Medha, a 57 years old lady lived with her husband, son, daughter-in-law, and grand daughter in a traditional housing complex in South Bombay on a rental basis. She belonged to a Brahmin family, and hailed from Ratnagiri. Mrs. Medha was born and raised in Bombay. She held a BA, B.Ed degree and worked as a school teacher. Her husband lead a retired life and earned a pension of 2,500 Rs, and her son (39 years of age) was a cancer biologist. Her daughter-in-law (34 years of age) worked a medical doctor with the Thana Municipal Corporation. Together, the household's income was around 21,500 Rs per month.

Mrs. Medha had an attack of malaria two months before the interview. She narrated the story of her encounter with the illness in the following words:

"I had developed high temperature on Monday. It was 104 (F). I thought it was flu. There was no shivering. I was feeling very dull, so I took capsules of amoxicilin. I also had acute diarrhea, and severe headache. My stomach was swollen and I had severe pangs on the right side of my head (headache). I was in a state of delirium. I was almost unconscious. I had not passed urine during the entire day. My daughter-in-law, who is a municipal doctor had advised me to take amoxicilin. The fever and severe headache, however, continued. Normally, when I used to have fever, I would still continue with my daily chores, but this time I simply couldn't get up. On Wednesday my daughter-in-law sent for Dr. B. He tested my blood and diagnosed my illness as suspected malaria with typhoid. He said that I had unnecessarily spent two days believing that it was ordinary fever. Next day (Thursday) I was immediately admitted to a hospital (for five days). I was scared that I would die. There they tested my blood, but found it negative for malaria. The doctor advised me to go for a second blood test. This time the report revealed *falciparum* plus *vivax* malaria. I was completely dehydrated by then. My mouth was dry, and I could not swallow anything. Even if I swallowed little water, my throat would start burning. I had developed tremendous acidity in my stomach. Since I could not swallow oral B-complex, the doctor gave me a B-complex injection. He gave me 3 bottles of saline and 5 tablets at 1/2 hour interval, but I threw up everything. Then the doctor gave the same tablets to me again, but this time along with cold milk. He told me that only chloroquine or quinine will not be effective, so he prescribed Larium tablets (mefloquin) which cost 500 rupees. The fever did not subside. My blood was tested again. This time

the report revealed negative malaria, but typhoid positive. The doctor treated me for typhoid and advised that I should go for a sonography test to see if my liver had suffered any damage. He said that *falciparum* malaria severely affects the liver. Everyone in my family was tense. Dr. B explained everything to me in detail about *falciparum* malaria and typhoid. Then I took one month's leave. My son and daughter-in-law also did not go to work for two days. I had also sent for my sister. She was with me for four days. When I was hospitalized, someone or the other had to be around me. At home, the situation was the same. For eight days after I was discharged from the hospital, I was restless. I was bedridden for two weeks, and could not even talk for two weeks. Even the sight of water made me nauseated. This was the first time in my life that I did not have coffee for such a long time. It took me one month to recover, but I continued to have weakness. I would blackout as soon as I got up from bed. I started going to school, but if I looked here and there, I used to lose my balance, so I traveled from home to school and back by taxi. Now everyone in my family is terrified of malaria."

Mrs. Medha's narrative highlights the fact that pain and suffering resulting from malaria was not restricted to the poor alone. People who are educated, well to do, with good access to health care and social support also experience psychosocial distress. Mrs. Medha's narrative signifies an interpretation that her case was complicated not only because diagnosis was delayed, but also because of inconsistent diagnosis despite undergoing a range of pathological tests. Her narrative also brings forth the long lasting impact that malaria has on the patient even after successful treatment.

We found that in certain social groups, especially among a particular section of the poor and uneducated, naturalistic and personalistic explanations for febrile illness/malaria coexisted, and their search for cure was defined accordingly. The following case is an example of this dimension. Mrs. Anusuya, 35 years of age, had been living with her husband and five children in the Chandivali quarry area for the past six years. Her husband worked as a stone breaker in the *khadan* (quarry pit) and earned 2000 Rs per month. Three of her children were married recently.

Anusuya recounted her experience with her youngest son's illness:

"When Sunil (one and half years old) was sick, we took him to our regular doctor - Dr. S. He gave him an injection and tablets for two days. I had to spend a total of 63 Rs. But the medicines were not effective. Then we went to our company's dispensary. There they gave him tablets and syrup. But nothing happened. Then one day, he rolled his eyes. He had a convulsion, and had lockjaw, and froth started coming from his mouth (*Haat akadle*). Then my neighbors told me to see for "outside" treatment (non-medical). It was late in the night. So I went to the local *Lakshmiaie* temple. The priest tied a black thread around Sunil's neck. He told me to do two things the next morning. First, to take a lemon and (*ooval*) circle it around Sunil's body seven times before throwing it, and second, to take little of my breast milk, put little sugar in it, and circle it around Sunil's body seven times before feeding it (the sugar) to a dog. The priest took 50 Rs for all this. I had to borrow the money from my neighbors. Then the malaria worker came. He took a sample of Sunil's blood and gave tablets - one red and one white - 1/2 - 1/2 a day. After three days, he told us the report, and gave four tablets for two days - 1/2 - 1/2. Sunil became all right immediately. Now he is fine. He drinks my breastmilk without any problems."

Mrs. Anusuya's narrative provides an example of lay perceptions of doctor's medicines - she saw delayed effects of doctor's medicines as failure leading to distress and recourse to folk remedy that was also combined with treatment from the malaria worker. Her narrative also provides an example of how lay persons in their search for cure resort to simultaneous use of multiple sources of therapy that may be ideologically inconsistent systems. Mrs. Anusuya's narrative, however, does not suggest whether she attributed Sunil's cure to the doctor's medicine, folk remedy or the malaria worker's medicines.

One of the most poignant narratives that we documented during this research was that of Mrs. Shahida from a village in New Bombay. Her narrative accentuated the intensity of pain and suffering a person has to go through when affected by multiple episodes of malaria, at a time an already distressed personal life. Shahida was 28 years of age, and had received only four years of

formal schooling. She lived with her husband who was a temporary laborer. He earned 20-30 rupees daily. Shahida had no living children. She and her husband had arrived in New Bombay 13 years ago (Shahida was married very young), and had been living in the present village for the past 4 years. Because of severe water shortage in the village, Shahida had to bring water from a distance source (a well) and store it in a Jerry can for up to 10 days. She had to defecate in the open, as did many other residents in the village. Both she and her husband had malaria several times. Shahida was seriously ill at the time when we visited her, but she had managed to sit up to tell us the story of her illness in an emotionally charged tone. Shahida narrated:

"My baby girl died within a few days after I had delivered her. I was filled with tremendous grief and cried a lot. I must have become ill because of that. This was the fifth time that I had delivered a baby, but all of them had died within hours or days after they were born. I have been married for 13 years. My baby had pneumonia, and her hands and legs had become black. I took her to Sion hospital, but she did not survive. My life is filled with sorrow. Last year both my husband and I had malaria. We took treatment from private doctors. I was pregnant when I had fever. The fever had gone into my head. I used to vomit, and have severe body pain. My body had become cold. I could not lift my hands and legs. There was a burning sensation in my mouth. Then I realized that it must be malaria (based on past experience). But that malaria became typhoid. I was admitted in Sadguru Hospital at Ghansoli, and my condition was terrible. The doctor there had written prescription for malaria. I was all right for a few days. But then the fever came back after my delivery. I got my blood tested from the malaria worker. He had given me four tablets which I ate, but they did not bring me any relief. Then I went to Dr. Shinde. He told me that there was no blood in my body. He gave me chloroquine tablets and chloroquine injection. I had a reaction because of those medicines. I rolled my eyes and fainted. I had gone completely cold. *Sirf dil garam tha* (Only my heart was warm). I had become completely yellow. My neighbors gave me a mustard oil massage, and advised me to stop taking the tablets. When I went to the doctor again, he again told me that I had fainted because there was no blood in my body, and it was normal for something like that to happen. He gave me *takat ki injections*.⁴³ Finally I had to spend more than 422

⁴³ Six months after we had documented Shahida's narrative, we met with the private practitioner who had given medicines to Shahida after which she had fainted. Upon mentioning Shahida's case, he immediately corroborated Shahida's story, and said that he himself had panicked after he had seen Shahida faint. Apparently, a crowd had gathered to attend to her. We also informally inquired with the local people about what had happened to Shahida, and several

Rs on my illness - 200 Rs as doctor's fees, 110 Rs for medicines, and 112 Rs for tonics. My husband has not been going out to work because of my condition. Now we owe 3000 Rs to people from whom we had borrowed for my illness. I have to pay 600 to the local grocer, and also pay the rent. My husband and I survived on tea and biscuits. My brother who works in a biscuit factor in Kalyan had come to help us. He had brought the biscuit packets from his factory. Now I feel very weak. I have no appetite. I feel feverish. I get a stomachache and feel that there is no energy left in my hands and legs. But now even if I have fever, I will not go to a doctor. I have lost all my faith in these doctors. I will take a Crocin and see what happens. These doctors also cannot recognize my illness. They don't treat their patients humanely, but are only interested in making more money out of their patients. I am terrified by malaria. *Agar malaria ne ek bar pakad liya, to puri jindagi barbad ho jati ha. Malaria ne ek bar pakad liya to picha nahi chodata hai.*" (If malaria catches you even once, it destroys your entire life. Once malaria catches you, it will not leave you in peace for the rest of your life).

Shahida's narrative reveals that she and her husband were already distressed by the fact that none of their babies had survived. Poverty had only compounded their problems. Repeated encounters with malaria had exacerbated their hardships and their impact on her health and nutritional status was severe. Mrs. Shahida's experience with treatment seeking had left her disillusioned with the exploitative and callous attitude of the local private practitioners, and in effect had intensified her fear of malaria. Mrs. Shahida's reference to her encounter with local private practitioners in her narrative encodes local cultural models pertaining to cultural expectations from doctors.

The next case of Mrs. Suman again highlights how an episode of malaria adds to the already existing distress in a family.

people from the village recalled the episode, and expressed their concern for her health. We were told that Shahida was a "healthy" young lady weighing around 60 kilos, but after her illness she had become weak and had literally "dried up."

Mrs. Suman, a 40 years old lady, lived with her mother and three children. Her husband, a drunkard who roamed the streets, and had apparently not come home for the past eight months.

Mrs. Suman's son Chandramani had malaria three times in a span of six months. She narrated:

"My son Chandramani had slight fever. We thought it was ordinary fever. Then he developed a *gaat* in his stomach (spleen). He was admitted to the Mathadi Kamgar Hospital, where he was kept for 15 days. They had said that he should be kept in the hospital for at least a month, but I decided that it was not possible because I did not have the money to pay the hospital bills. *Tyala dava goli devun ti gaat hospital madhe jiravli* (They gave him medicines and "digested" the *gaat* - enlarged spleen). The nurse was angry and said that if Chandramani gets this *gaat* again, I should not bring him again to this hospital. She said that I should take him to Sion hospital and take blood (*rakta bharaila sangitla*). When he was first sick, I had taken him to Dr. M. He did not give any medicine to Chandramani and kept him just like that till the evening. Then he gave him an injection in the evening, and told me to take Chandramani to the Mathadi Kamgar Hospital. Meanwhile, the malaria worker had come home. He checked Chandramani's blood, and returned after two days to tell us that Chandramani had *vivax* malaria, and gave tablets for five days - two tablets for the first day, and three tablets once after meals. Now Chandramani is all right, but earlier he used to study well, now he has lost his concentration and *buddhi* (intelligence - IQ). He cannot remember anything. When Chandramani was not well, and he was hospitalized, I was worried a lot. I stayed with him in the hospital. I used to eat only occasionally. I did not have any appetite. Chandramani had to miss school. Since he had missed so many classes, his name was deleted from the school's register. The principal refused to readmit Chandramani to the school. He said "Why didn't you tell us before hand that your son was so ill?" I pleaded and even showed him the hospital report, but of no avail. Now after all this has happened, I am very scared about this malaria."

Mrs. Suman's married life was already disrupted. Her narrative reveals her anxieties that were compounded by financial difficulties and her son's illness. Her son suffered from chronic malaria, and her worries surrounded two problems - Chandramani's well-being and his loss of intelligence which she attributes to repeated attacks of malaria and the treatment that he had received, and his disrupted education. Her narrative also encodes the cultural expectation that the mother automatically assumes responsibility for care taking and therapy.

The following narrative also tells us about the various ways in which malaria disrupts family life and becomes a cause for dismay. Mrs. Aruna, 40 years of age lived with her husband and two children in Koperkhairane village, in New Bombay. She had come along with her husband as migrants from rural Maharashtra 15 years ago, and had been living in the village since then. Her husband worked in a local company and earned 2,500 Rs per month. Mrs. Aruna, her husband and her two children had malaria recently. She narrated:

"My son Sandeep (14 years of age) gets malaria every year. Each time we have to spend at least 2000 Rs on his treatment. He was admitted in Indrayani Hospital in June this year. Last year he was admitted in a hospital in Chembur. He was hospitalized two times, and each time he was kept there for 3-4 days. They had given him 9 bottles of saline. We had to pay a bill of 1135 Rs. In addition, the doctor had also prescribed outside medicines. My daughter Sangita was also admitted in the same hospital. That was after Sandeep had just recovered. The doctor had given her two saline bottles and some medicines. When Sandeep had fever, he was first taken to Dr. C. He gave one injection and tablets for three days. Sandeep started vomiting after taking the tablets, and his fever did not subside. Dr. C advised us to admit Sandeep in Sai Baba Hospital or Sadguru Hospital, but we decided to admit him in Indryani hospital. There they gave him 4 bottles of saline, and advised four tablets per day for 15 days (Quinasol - 300 mg, Quinaprim - 15 (primaquin)). Since Sandeep and Sangita were both admitted simultaneously, we had to undergo lot of mental tension. My life was in disarray. We could not celebrate the Diwali festival. We neither made any sweets at home, nor did we buy any new clothes. My husband used to eat in his company's canteen. Our neighbors came to help us. We had to do much running around. I too was unwell then. Even I had malaria, and I still had to do all the work. I used to take the injections. Sandeep had to miss school. Sangeeta also had to stop going to college...where to get the money from? So I very scared of malaria. Everytime time Sandeep gets fever, I begin to cry. His father also gets worried and does not eat or sleep well. Now Sandeep has become thin and weak. He can neither go around, nor can he go out and play."

Mrs. Aruna's narrative highlights themes of money and financial difficulties resulting from several episodes of malaria in the family. In addition, her narrative throws into sharp relief issues pertaining to family roles during illness situations - specifically, the father as a worried person.

During the course of our fieldwork, we consistently encountered a common cause for anxiety among the people of Bombay and New Bombay - an illness episode that required the patient's hospitalization. The cause for worry was not the economic consequences alone, but also the ways in which the whole process tends to disrupt their everyday family life. Emphasized in the following narrative is yet another case example of the level of financial disruption that an episode of malaria can cause, besides the social and psychological distress.

Mrs. Jaishree, 27 years old, lived with her husband and three sons (children) in a slum in New Bombay. Her husband was a public transport bus conductor, and earned 4,500 Rs per month. The family lived in Chembur (Bombay) for 3 years before moving into the present slum locality two years ago. Jaishree narrated:

"My son Rushikesh (1 year old) developed high fever. I took him to Dr. G. because he is close by. He gave him tablets for three days - 1/2-1/2-1/2 and syrup Calpol-Norflox 5 ml three times a day. Upon taking the medicines, Rushikesh's face turned yellow, and his blood in the body became less. Dr. G. medicines did not bring any relief, so we took him to Dr. S. in Chembur. He gave tablets for 10 days -1-1/2-1/2 (Nivaquine) to be taken after meals. Rushikesh became all right with those medicines. I used to give him the tablets by diluting them in sweet water. He had lost at least two kilos of weight because of malaria. Now he is all right. He eats well. The doctor says that he has regained his weight. In all we had to spend more than 2000 Rs on Rushikesh's illness - Dr. G. - 135 Rs fees, 40 Rs medicines - total 175 Rs. Dr. S. - 150 Rs fees five times (750 Rs), 100 Rs transportation, 100 Rs for fruits. We had to take milk on credit, and doctor's bill also has to be paid. My husband had to take a loan of 4000 Rs from his colleague at 5% per month interest. He has repaid only 500 Rs so far, and the balance is yet to be paid. My brother had to pawn his gold chain with the local money lender against a loan to help us out."

Mrs. Jaishree's narrative highlights in the first place, her cultural knowledge about treatment options and the costs involved. Through her narrative she also conveys her financial concerns

related to the illness - disruption in terms of household economics that had led to an act of borrowing - that was culturally accepted, and the manner in which extra-familial social support in mobilize for resources. By talking about her brother being helpful during a crisis period, Mrs. Jaishree's conveys through her narrative a cultural model pertaining to social role expectations.

The following narrative provides yet another complex account of the financial consequences that multiple episodes of malaria have on the affected family's finances. Mrs. Lalita was 30 years of age and lived with her husband and four children in a village in New Bombay. She and her husband had a tailoring shop in the village where they had been living in a rented house for the past three years. Lalita narrated:

"In my family, every one has had malaria. Two of my sons - Deepak, Anuragh and myself - we had malaria in 1994 - twice. Then we had done a blood test in New Bombay Hospital, and the report was positive for malaria. They (doctors) had prescribed me those tablets (probably mefloquin) which cost 175 Rs each. Then my son Deepak and I had malaria simultaneously, and we were both hospitalized together for 4-5 days. Two months ago, we were hospitalized again for 10 days. *Saline ka to kahi limit hi nahi raha* (There was no limit to the number of drip salines given to us). My husband had to spend around 7,000 Rs for our treatment last year, and now this year he had to again spend more than 10,000 Rs...I hate medicines. I had not seen a hospital till we came to New Bombay. *'Char bachhe huwe hai, pur kabi taklif nahi hua, sare ghar me he paida huwe hai.* (I have delivered four babies so far. All my children were born at home, but I have not experienced any (health) problem so far). This time my problem started with fever and headache. I used to get a terrible headache. I also had lot of weakness and no appetite. I was bedridden for a month. Dr. Ka gave me medicines for 5 days - tablets and syrup. I had to take 3 tablets after every meal. To prevent me from vomiting the doctor had given one tablet that I had to take half an hour before taking my meals. But still I used to vomit. After this treatment, my blood and urine were checked. The doctor said that it was malaria and I was hospitalized for 8 days. They must have given me more than 30 bottles of glucose/saline. Before going to Dr. Ka, Dr. K. had given me 3 bottles of saline at home. He prescribed very expensive tablets (175 Rs for each tablet). The fever was brought under control because of those tablets, but I continued to vomit, and my weakness also continued. After I was discharged, I continued to take the medicines for one

month - along with tonics and some powder that had to be taken with milk that Dr. Ka had prescribed. I was still weak. The doctor had given me 1 bottle of the blood. He gave it before starting the course of these tablets. I had very high fever accompanied by rigors. It was not so when I had malaria the last time. But this was the third time, I was having malaria. I had taken those costly tablet before taking the blood. We bought them twice. The first time I took all 3 tablets at a time and during the second time I had 3 tablets after every meal - 3 tablets a day. Dr. K. has not yet told us about his fees for the saline. We still have to settle his bill. Dr. Ka's bill was 2075 Rs. For the blood he charged 800 Rs. The medicines he had prescribed and tests cost 1000 Rs, and 3,500 Rs for the medicines. Blood was tested 3-4 times. Each test costed 40 Rs. We must have spent 1000 Rs on tonics, fruits etc. In all, we had to spend more than 10,000 Rs altogether on this malaria sickness."

In Mrs. Lalita's narrative, themes of money and treatment cost abound. Through her overelaborate details about the expenses of various consultations and treatments, with precise figures, Mrs. Lalita conveys her thought that she did all that was possible to provide specialized care during her own illness and also that of her children. Her narrative also brings forth the fact that private practitioners have a tendency to prescribe expensive antimalarials like mefloquin and supplement the therapy with I.V. drip salines.

As noted earlier, people in Bombay and New Bombay had a tendency to "switch doctors" in search of appropriate therapy and cure. The following case focuses on this issue.

Mrs. Asha, 34 years of age lived with her husband who was construction worker, and five children in Turbhe Store slum in New Bombay. She narrated her own experience with malaria:

"I had high fever with shivering. I went to a doctor in Turbhe. He gave me tablets and injections. I had to pay 30 Rs for each injection, and the doctor prescribed me medicines which cost me 75 Rs. The fever came back. Then someone told me that "that" doctor in Vashi is good. So I went to that doctor, but his treatment was not effective. Finally I ended up going to as many as five doctors. In all I had

to spend more than 2000 Rs. Then one day, the malaria worker had come home. He asked me about my fever, and gave me tablets - 4 for the first day, and 2 each for the next four days. The tablets were effective. I felt all right. I did not experience any problems, except that I continue to feel weak. I became all right because of the malaria workers daily visits to me. I have told my neighbors that the malaria worker's tablets are good. Instead of going to a private doctor and wasting money, it is better to take the malaria worker's tablets."

Mrs. Asha's narrative reveals local cultural models about seeking appropriate therapy. Typically, people move from one source of therapy to another in search of cure. Through her narrative, Mrs. Asha conveys local concerns about the cost of treatment at private practitioners, and also affirms her faith in the malaria worker's medicines to the point of suggesting to her neighbors into accepting a therapy that was free yet effective.

In the course of our fieldwork, we did not encounter many reports of death due to malaria. The following narrative provides an example of how a malaria related death was interpreted.

Mr. Bahe, a 45 years old prosperous businessperson lived with his wife and two children in a plush locality in South Bombay. The family hailed from Bikaner in Rajasthan, and had been living in Bombay since 1979. Mr. Bahe's mother was 72 years of age, and had contracted malaria recently. Mr. Bahe reconstructed the events that transpired and eventually lead to his mother's death in the following words:

"My 72 years old mother was recently diagnosed for malaria. After three days of fever, she was unable to get up from her bed. So I persuaded the doctor to do a second blood test to find out if it was "some other type of malaria." The doctor said that it was not necessary to do a second test, and because she could not eat anything, he gave her I.V. fluid, and also arranged for a private nurse to look after her at home. Immediately after she was given the I.V., she turned blue, and had a massive heart attack, may be because her temperature and shivering had increased

tremendously. We thought she would die then and there, but she survived. Her condition had worsened because of the I.V. She was kept on artificial respiration, and a pacemaker was also fitted. The doctor gave her Nivaquine and Reziz Forte - 6 at a time. She developed nausea and vomiting, and on the fourth day she had another massive heart attack and died."

In his narrative, Mr. Bahe conveys the message that he did all he could to give the best available treatment to his mother, but she had to finally die because of the doctor's incompetence.

The next case portrays the travails of a mother who was confronted with a situation where her daughter experienced seizures at a time when she had also contracted malaria. Mrs. Vimal, a 30 year old lady, lived in a hut in Belapur along with her husband and two children her brother-in-law. She narrated:

"My two children Asha (Vimal's daughter - 2 1/2 years of age) and Sachin (5 years of age) have been having fever for the past one year or so. Asha especially has been continuously sick. Last month, Asha had fever with shivering, so I was sure it was malaria fever. I gave her fever medicine (Retherma 60 ml and Lariago 60 ml) which was at home. Later she had a convulsion, so I took her to Dr. Sinha for treatment. Other doctors had refused to treat Asha because she was having seizures. Dr. Sinha gave her an injection and tablets. His treatment brought immediate relief to Asha. After three days, the fever came back. We took her to the Kamgar Hospital at Vashi where they admitted her and gave 3 bottles of saline and prescribed medicines for 14 days. They advised us to give Asha 1/2 tablets twice a day for fourteen days. Asha was all right for a few days, but the fever came back again. Then we took her to the Sion hospital. There they gave her red color medicine for 14 days, and Lariago tablets 1/2 twice a day after meals. They advised us to do Asha's sonography (CAT scan?) because she was getting epileptic seizures. Since they asked us to pay 1000 Rs we did not go to the hospital again. We had to spend over 2000 Rs on Asha's illness. We had to pawn my gold ornaments and borrow money from the local goldsmith."

In Asha's narrative, the treatment seeking pattern was complicated by the fact that she developed convulsions and her parents did not have adequate resources for appropriate diagnosis and treatment. In addition to emphasizing the economic arrangements that she had to make during the

crisis, Mrs. Vimal's narrative highlights cultural models about expected behavior of private practitioner. In this case, the refusal of some of the practitioners to treat her daughter at a time when she had convulsions ran counter to the expected behavior of the local private practitioners.

Mrs. Kausaliya's narrative is yet another poignant example of the suffering that repeated episodes of malaria cause in poor families. We documented Mrs. Kausaliya's narrative in great detail, and visited her several times during the research. Mrs. Kaushaliya lived with her daughter in a slum alongside the railway tracks in Belapur, New Bombay. Her husband had deserted her, and two of her sons lived with her brother in Bombay. Kausaliya's narration is reproduced below in some detail: [Text in brackets are researcher's questions]

"Both, my daughter and I have had *thandi tap* (malaria). In fact, today the doctor has called me for the medicines. The fever relapsed twice after you had met me last month. My daughter also got this fever again. I bought these medicines (from the local pharmacy), but they were of no use...no effect at all. So I went to the municipal hospital (municipal health post) at Dharava. They have called me for the medicines today, but I have not been able to go till now [For how long have you been having this fever?]. Four or five days. I had been to these private doctors, but their medicines did not cure me, so I went to Dharava [What about your daughter?]. I took her to this private doctor [Did they (the health post staff) check your blood and give you the report?] Yes, they checked the blood, but did not give me the report. They don't give the report [What about your daughter, did you take her along with you?]. No, I did not take her there. The doctor (malaria surveillance worker) had come here to collect the blood [Did he also check your daughter's blood?]. Yes. My daughter had fever for four or five days. *Ticha zala ki mala yenar, ani maza zala ki tila....* (When she had finished with her fever, I would get it, and when I had finished with my fever, she would get it....). [For how long has this been going on?] Almost for one and a half year. That blood report I showed you when you were here the last time, was mine. It was before the Diwali Festival. The doctor took 60 Rs for the blood test in a private laboratory [It must have been very expensive for you]. Yes, they charge 25 Rs per day in the hospital [Were you hospitalized?]. Yes, for three days. The doctor had prescribed medicines for me, but the fever came back again. *Machar chavate na sarakhi sarkhi...* (Mosquitoes keep biting repeatedly...thats why...). [Who looked after your

domestic chores when you were sick?.] My neighbors looked after my daughter. A lady from the other slum told the doctor that I did not have any relatives in New Bombay, and offered to take the responsibility of looking after my daughter [Did the doctor give you saline?]. Yes, two bottles. [Did they charge you for the medicines?]. No. [How much did you spend?]. 75 rupees [How did you manage the expenses?]. I took a loan from my neighbors, worked hard and returned the borrowed money to them within two months. I went to work immediately after I had come from the hospital. If my neighbors had not helped me, my daughter and I would have had to starve. I borrowed some rice from my neighbors to feed my daughter.

The last time when I went to the government hospital (PHC), it was not useful at all. *Kahi nahi, bagat nahi, golya detat tyacha goon pun yet nahi* (No nothing, they don't pay attention to you, and the tablets they give don't bring any relief). At least the Dharava hospital (municipal health post) is good. I took the medicines they gave me only once. It was so effective that I was completely all right in two days. They have called me again today. Earlier when I had been to the government hospital (PHC), they were to give me saline, but so far they have not given it. The doctor there had prescribed some medicines. I bought the injection and medicines from the local pharmacy, but I had to go to a private doctor to get the injection [Did you know that it was *thandi tap* (malaria fever) or did you believe that it was ordinary fever?]. *Lagecha kalate ata kay aahe te. Lai vela yevun gela na, thandi vajate, kata phutho, ani tap yeto* (Yes, I immediately get to know whether it is malarial fever or ordinary fever. I have had it so many times that I realize that it is malaria immediately...I start to shiver, I get goose pimples, and get high fever). *Tap bharla ki udate manus, kitibhi angarwar ghetale tari udatay thada thad* (When malarial fever sets in, you tend to toss up and down. Even if you cover yourself with thick blankets/bedsheets, still you will continue to get tossed up and down). [Have you tried self-medication?]. Yes, I have taken several types of tablets. But, since they were not effective, I had to go to a doctor. I asked the local pharmacist to give me tablets on fever. I always keep these tablets at home and take them whenever I get fever. I also give half a tablet to my daughter. Only if the fever does not come down, do I go to a doctor. [Do you keep *panyachi patti* (a strip of cloth dipped in salt water) on the forehead when the fever is very high?]. Yes, I put it on my daughter's forehead whenever her fever goes very high, but I think that the fever actually goes up with that *patti, thundi bharte* (body gets filled with cold). The other symptom of malaria is that you feel very thirsty, but if you drink water, you tend to vomit. There is headache, bodyache, joint pain in malaria. *Bote suddha dukhtayat* (fingers also ache). The last time I had malarial fever, I did not even have the energy to get up. *Malariacha tap halu halu chadhat jato bara... ani khoop thundi vajate, mug halu halu tap utarayla lagto* (In malaria fever, the fever goes up gradually, and then you feel terribly cold (shivering), and then the fever tends to come down gradually). This fever makes you so weak that you can

neither sit nor get up. This time I decided to go to the Dharava hospital (health post) because of my neighbor who works as a sweeper in that hospital. She had told me that it is a good hospital, and that the treatment they give to patients is good. I went there and they gave me the medicines (tablets). So, I had to take four tablets initially, and then two tablets in the morning, afternoon and evening for three days. I took the tablets, but felt giddy, as I hadn't eaten anything before taking those tablets. My neighbor bought a *wada pav* (spicy bread) for me, which I ate, and then felt okay. I still feel very weak. Headache and body pain continues. I did not go to work for two days. [Did they charge you for the treatment when you had been to that hospital (health post)?]. Yes. 2 Rs for the case paper. I took my daughter to Dr. D's clinic (private practitioner). He gave her an injection and medicines (tablets). He took 20 Rs as his fees and I had spent another 12 Rs for the medicines he had prescribed. I had to borrow the money from my neighbors. I have not returned it to them yet. When I start working, my life goes on smoothly, but when I fall sick I cannot go to work, and my loan accumulates. As I don't have a helping hand at home, I have to do everything all by myself. I cannot even bring water to drink at home when I am sick. So I manage with the left over water. My daughter and I don't take a bath when I am sick. I somehow manage to cook rice for my daughter. That's all. Sometimes my neighbors come and help.

[Why don't you go to the local PHC when you are sick?]. There is no point in going to the government hospital (PHC). You don't get any medicines in that hospital. They ask for money first, and only then do they attend to you. They charge us for putting the saline bottle. When I had been to that hospital last month, the doctor had asked me to buy the injections with needle and the syringe from outside, saying that saline was not available in the hospital. He asked me to pay 150 Rs for the saline. I offered him 100 Rs because that was all I had with me. After a while, another patient came. The doctor used those injections meant for me on that patient, who paid the doctor 150 Rs. The doctor did not even give me a single tablet. By then I had fainted. Some senior doctors from the government (Department of Health) had arrived at the hospital. When they saw me - and noted that I had fainted, they yelled at the doctor. They asked about me. The doctor told them a lie saying that I needed saline, and that he had sent the attendant to get the saline from the local pharmacy. By then I had regained my consciousness with the help of the visiting doctors. I told them that I had come there at 10.30 a.m. but nobody had paid attention to me, and that they had not even given me a single tablet, although it is now 3 p.m. I told them that the doctor had taken care of the patient who had come after me, because he had agreed to pay 150 Rs, and he neglected me because I told him that I could give him only 100 Rs. The visiting doctors were very angry with the doctor. They called him for an inquiry and after finding out that what I was saying was true, they told the doctor to return my money (100 Rs) immediately. The visiting senior doctors then went to the store room and opened it, and found that there was a large stock of saline bottles. The

visiting doctors were furious with the doctor. After the visiting doctors had left, the PHC doctor offered to give me saline and also return my 100 Rs, but I refused to take anything from him. I was scared that he would put some poison in the saline so that I would die. I somehow dragged myself and reached my hut, and in the evening went to a local doctor and took saline. Those people at that government hospital (PHC) charge us for the saline that they have in stock. Those saline bottles are from the government and are meant to be given to the patients free of cost, but they charge us for those saline bottles and pretend that they have sent their assistants to buy it from the local shop. The truth is that patients who go to that hospital (PHC) are already fed up with their sickness, and they agree to whatever the doctor in that hospital tells them to do. This is how the doctor in that hospital (PHC) makes lot of money.”

Mrs. Kausaliya’s narrative sums up some of the main issues that emerged through the several illness narratives that we documented. In the first place, for the people of Bombay and New Bombay, malaria meant far more than a disease. It epitomized suffering, mental agony, economic hardships, disruption in the everyday life, and often impending death. Kausaliya’s narrative emphasized the reality that several households in Bombay and New Bombay often experienced multiple episodes of malaria simultaneously. While past experience with malarial episodes might have heightened their symptom sensitivity, repeated attacks of malaria made illness management difficult and complicated.

Self-medication was often the first resort, but for various reasons people preferred to resort to a private practitioner for treatment albeit it was expensive, and doctors were often perceived as being unsympathetic greedy and provided inadequate care because one was poor. Several of the narratives highlighted cultural models of social interactions with doctors and cultural expectations about how a doctor should act. Dissatisfaction with the public health system was a common issue for the people of Bombay and New Bombay to choose an alternative that was expensive. Anti-

malaria therapy in these places often constituted expensive modes that included injections and I.V. saline drips. Malaria therapy being expensive, many households had to borrow money from relatives and neighbors. Several of the narratives also brought to light local cultural models about the appropriateness of borrowing money from extra-familial sources and mobilizing extra-familial social support during times of crisis.

Whether Worried About Getting Malaria Again

After our respondents had finished telling us about their personal encounter with malaria, we asked them whether, given the difficulties they had to go through, were afraid they (of the consequences) that they or someone else in the family might again contract malaria. Interestingly, 40% of the respondents said that they were not afraid of the illness. Most of them (56%) were confident that malaria could be cured with doctor's medicines. Another 29% believed that it was "God's will" that someone should get malaria and worrying over it was not going to prevent it. The remaining 15% simply said that they had contracted malaria so many times, that they had got used to it, in that it really did not worry them.

However, 60% of the respondents who were worried about another attack of malaria, gave the following reasons why they were afraid. Thirty-six percent were afraid because malaria could "go into the head" (cerebral malaria) and bring death. Twenty-one percent were concerned about the enduring weakness that a single episode of malaria sets in the patient. For 14% of the respondents it was a question of finances - malaria meant expenses - an expensive thing that drained them of their limited resources, and often compelled them to borrow money from others. Fourteen percent

were specifically worried because of the kind of disruption that the illness causes in family life, especially the fact that children have to miss out on school because of the illness. Eight percent were worried because malaria was “contagious” in that, if one person in the household were to get malaria, others would soon follow, which made all the more difficult. The remaining 4% were worried because "if you get malaria once, it doesn't leave you, it keeps harassing you repeatedly."

Table 4.12

Table 4.12 showing (in percentages) whether people in Bombay and New Bombay were worried about getting malaria again.

City

WHETHER WORRIED	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
Yes	58	63	60
No	42	27	40
Total	200	200	400

Table 4.13

Table 4.13 showing (in percentages) whether people in different locales in Bombay and New Bombay were worried about getting malaria again.

Locales

WHETHER WORRIED	SLUM	VILLAGE	NODE	APARTMENTS/ BUILDING COMPLEXES	ALL LOCALES COMBINED
Yes	68	56	56	58	60
No	32	44	44	42	40
Total = N	120	71	64	145	400

Table 4.14

Table 4.14 showing (in percentages) whether people in the different municipal wards of Bombay and New Bombay (eight research sites) were worried about getting malaria again.

	Bombay				New Bombay			
WHETHER WORRIED	A Ward	D Ward	F/S Ward	Chandiv ali	Belapur	Nerul	Turbhe	Koperkh airane
Yes	60	68	42	60	78	64	50	60
No	40	32	58	40	22	36	50	40
Total % (N)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)	100% (50)

The following excerpts from our interviews highlight different reasons why malaria was an illness that the people of Bombay and New Bombay were worried about. For instance, Mrs. Swati, a 40 years old homemaker from Malabar Hill, Bombay, said:

"Malaria abhika jaan leneka ho gaya hai (Malaria has become deadly). When we used to get malaria a few years ago, we would not be frightened, but now the very thought of someone in the family contracting malaria terrifies us. I routinely go to the local chemist shop and ask "how many people are buying malaria medicines from your shop? Do people come to buy malaria tablets every day?". In this way, I get to know whether there is lot of malaria going on in this area so that we can take precautions...When my husband developed high fever two weeks ago, and started shivering vigorously, I panicked. I lost self control and did not know what to do. I feared for his life. Thank God! He became all right. I think God left me healthy so that I could look after my husband when he was so ill."

Ms. Rohini, aged 20 years, from a village in New Bombay, summed up the sentiments shared by several people in her village and elsewhere:

"People say that they have become beggars (gone broke) because of malaria. Hospitals in New Bombay demand an advance deposit of 500 to 5000 Rs or else they will not admit the patient. There are many people in this village who had to sell their gold ornaments to raise the money to meet an emergency. The very mention of malaria terrifies people. Malaria mhanje bhikari hone! ("Malaria means becoming a beggar!")"

Mrs. Archana, aged 28 years, from New Bombay, who had recently recovered from an episode of malaria said:

"Now I am very scared about malaria and pray that I don't get it again. Malaria brings in lots of hardships. I am all the more afraid of it because other than me there is no one else in this house who can look after the chores in case I fall sick. If I fall sick, I have no option but to manage the house even in my sickness. *Chool chooknar nahi striyana* (women cannot escape the hearth). Besides, I am frightened of malaria because it can bring death. Recently, one school going village boy had high fever. That fever went into his head. He was taken to the municipal dispensary (Health Post), but he was dead by then. We heard about this news from some women from our village when we had gone to a nearby hospital. Now, even if people in this village get slight fever, they immediately panic. I have heard that at least two children have died because of malaria recently in Belapur. I have also heard of death cases in other parts of New Bombay - Turbhe and Nerul. There too, children have died of malaria."

Although we were concerned that fear of death was an important reason why the people of Bombay and New Bombay were afraid of malaria, we did not get much information on deaths due to malaria through the ethnographic interviews. Therefore, we probed into the issue of "deaths due to malaria" during the FGDs. All participants in all the FGDs spoke of malaria related deaths in their locale. One discussant in a FGD told us:

"In this area quite a few pregnant women have died because of malaria with jaundice. One lady from this slum had malaria and jaundice during her pregnancy. She was hospitalized and was given blood. She was seriously ill. There was no one at home, so her illness increased. She was later taken to Shivaji Hospital at Thane, where she was given more blood and she survived. The private doctor who was called to examine her at home, had said that the lady will definitely die in three days. A second lady who had malaria during her pregnancy died immediately after she had delivered her baby. She did not have any blood in her body. She was not taking her malaria medicines on time. A third lady died at home. She had very high fever with shivering. She and her unborn baby, both died. Her husband was a drunkard. There was no one around when she was ill. There was no one to even cremate her after she was dead. So everyone in this area gave *vargani* (contribution) and we cremated her dead body and her unborn baby." (Mhape slum FGD - Women's Group).

With a range of information in the background on the various concerns of the people of Bombay and New Bombay regarding malaria - what people believed caused it, how they had managed the illness when they were confronted with it, the difficulties they had to face while coping with the illness, and their fears about contracting malaria again, we probed in great detail the theme of malaria prevention. Data on the measures that people of Bombay and New Bombay took to prevent malaria are discussed in the next section.

Section III

Measures Taken to Prevent Mosquito Bites and Malaria

In the course of our fieldwork, we recorded our observations about the measures that the people of Bombay and New Bombay took to prevent mosquito bites and malaria - the two being closely linked at some level in the etiological explanatory models of most people. During the interviews, we elicited detailed information on what measures the respondents and their family members took to prevent malaria. We found that 10% of the households were not taking any preventive measure to possibly avoid malaria. Among those who consciously adopted certain measures which they believed prevented malaria (N=360), several of them used more than one measure. Most of these were aimed at driving/repelling mosquitoes. The frequency distribution of the different preventive measures used, and the number of households using each measure is presented in table 4.15 (see also table 4.16). The data clearly show that the most popular "pragmatic" anti-mosquito (and antimalaria) measure in Bombay and New Bombay was the use of a ceiling fan kept on full speed from dawn to dusk to ward off the mosquitoes, used mostly in conjunction with other measures. Whether this measure really offered the desired level of protection is doubtful, especially in New Bombay where the supply of electricity was erratic.

Table 4.15

Table 4.15 showing (in percentages) measures taken by the people of Bombay and New Bombay to prevent mosquito bites and malaria.⁴⁴

#	MEASURES TAKEN TO PREVENTIVE MOSQUITO BITES AND MALARIA ⁴⁵	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
1	Fan on full speed	38	66	53
2	Burn cowdung (<i>govariya</i>) etc	23	28	14
3	Burn "GoodKnight" on machine ⁴⁶	25	20	13
4	Mosquito net	5	18	6
5	Tortoise mosquito coil	7	20	8
6	Close doors and windows in the evenings	15	27	12
7	Clean floor with Dettol/ Phenoil etc.	17	12	8
8	Flit/Baygon (insecticides)	15	4	5
9	Dhoop (incense stick)	3	7	3
10	Set "GoodKnight" alight to knock down mosquitoes	2	18	6
11	Drink boiled water	9	6	3
12	Burn GoodKnight on bulb	1	6	2
13	Others("Odomos," prophylactic tablets, cover with bedsheet, keep food closed, window gauze/mesh)	13	13	7

⁴⁴ Percentages have been drawn on bases excluding 36 households from Bombay and 5 households from New Bombay that did not use any preventive measures.

⁴⁵ None of the respondents specifically mentioned using anti-malarials for prophylactic purpose. However, the fact that a very small percentage of people in Bombay and New Bombay did resort to prophylactic antimalarials emerged during focus groups discussions and the drug sales that we monitored at various pharmacies in Bombay and New Bombay (discussed in the next chapter).

⁴⁶ GoodKnight is a brand name product of Transelectra Domestic Products Ltd., a Godrej Group company in Bombay, which is the world's largest manufacturer of mosquito repellent mats, with other brands like Jet and Banish. This company is also India's largest manufacturer of aerosols. Transelectra Godrej claims that its annual sales turnover is in the excess of an enormous 80 crore Rs (Times of India, Bombay, December 19, 1995). Competing brands are many, mostly manufactured with Japanese technology. Business establishments which manufacture mosquito repellent mats, with 4% allethrin (and occasionally "citronella" as an additive) as its active ingredient, sell the mats with an electronic heating gadget that heats the mat that is placed on it and kindles it's repellent effect. However, as shown in Table 4.2, some households who find the electronic gadget very expensive, use the alternative of placing the mats on burning bulbs. Again, an ingenious practice is to set the mats alight, a process which results in mosquitoes falling down either in a knocked out state or are killed by the fumes. The fallen mosquitoes are then collected and smashed with footwear before they recover and are ready to fly.

Table 4.16

Popular Mosquito Repellents and Insecticides Available in Bombay and New Bombay

#	BRAND NAMES*	PRESENTATION	PRICE
01	"GoodKnight" Mats (d-trans-allethrin)	Mats	42.00
02	"GoodKnight" Machine	Gadget	99.00
03	"Casper" Mats	Mats	4.00
04	"Casper" Machine	Gadget	67.00
05	Baygon Mats	Mats	42.00
06	Odomos Mats	Mats	40.00
07	Buzoff Mats	Mats	40.00
08	Buzoff Machine (cordless)	Gadget	36.00
09	Buzoff Liquid Vaporizer	Gadget	112.00
10	Jet Mats	Mats	42.00
11	Jet Machine	Gadget	90.00
12	Jet Machine (cordless)	Gadget	45.00
13	Hit Spray	Aerosol Can	79.00
14	Hexit Household Insecticide Spray 1/4 liter	Container	32.50
15	Hexit Household Insecticide Spray 1/2 liter	Container	64.00
16	Hexit Household Insecticide Spray 1litre	Container	110.00
17	Hexit Household Insecticide Spray 300 ml	Aerosol Can	89.00
18	Baygon Household Insecticide Spray 1/4 liter	Container	36.00
19	Baygon Household Insecticide Spray 1/2 liter	Container	64.00
20	Baygon Household Insecticide Spray 1 liter	Container	110.00
21	Baygon Household Insecticide Spray 1 liter	Aerosol Can	92.50
22	Odomos Cream	Topical App.	16.50
23	Morten Mats	Mats	40.00

*For data on evaluation of certain mosquito repellents marketed in India, see Ansari *et al.* (1990)

Other means included burning cowdung cakes (*govariya*) (mostly in villages and slums) - a traditional mosquito repellent, just after sunset to drive away the mosquitoes, and different brands of a "mosquito mat" commonly referred by the people of Bombay and New Bombay by its most popular brand "GoodKnight." Significantly, bed nets and mosquito coils were not popular preventive measures, either in Bombay or New Bombay.

The data in the table 4.15 are revealing in the context of the global recommendation of impregnated bed nets as an ideal measure to prevent malaria. There are several reasons why the practice of using a bed net is not very popular in Bombay and New Bombay a) the weather condition - humidity levels are high during much of the year, which makes sleeping under a bed net intolerably uncomfortable b) bed nets are impractical to use, especially in Bombay because most of Bombay's population lives in slum localities where ordinarily between 5-7 people live in modest tenements often measuring 10 square feet c) there are more practical alternatives that people believe prevent mosquito from biting - such as using the ceiling fan, burning cowdung cakes, coconut fibre/coir to drive away mosquitoes, and fumigant mats, and d) people in Bombay and New Bombay, especially those who live in low income concentrations, do not clearly associate mosquito bites with malaria transmission. In homes where bed nets are used, their primary purpose may be to evade the nuisance of mosquito bites and other insects, sleep disturbance, and not necessarily as a malaria prevention measure. As noted above, most of the households used more than one measure to prevent mosquito bites and malaria. The following were some of the explanations given by some of our respondents.

Mrs. Indubai, a 35 years old homemaker from Turbhe Sector area, in New Bombay spoke of the following measures she took to prevent malaria in her household.

"To save ourselves from getting malaria, we use "GoodKnight." Sometimes we keep the *vadi* (mat) on the bulb (burning), and sometimes we set it alight. Ceiling fan is always on. We filter drinking water. *Shila jevan karat nahi* (don't eat stale food) . We cannot use a bednet because our room is small. We spend 45 Rs per month on "GoodKnight." "GoodKnight" kills mosquitoes that are flying in the house/room, but those which are hiding, they remain where they are. Mosquitoes still bite despite the "GoodKnight." Now mosquitoes have become *jabar* (recalcitrant), and have increased considerably."

The following description of taking antimalarials as prophylactic measures was described by a discussant in a FGD conducted in the Mhape slum in New Bombay:

"During the rains, we buy two tablets of "Pyralfin" from the local medical store (pharmacy). If we take even one of that tablet once every week, we feel better. My neighbor, Mr. Laxman was given two tablets of "Lariago" by his company doctor last year, and since then his health has been fine. Malaria workers give us tablets which are useful, but since they don't come here for three months, they are of no help to us. As far as doctors are concerned, even if someone is only slightly ill, doctors in this area write long prescription. Doctors and the pharmacists are tied to each other by their vested interests - the pharmacist gives a share of his profit to the doctors." (Mhape slum FGD - Men's Group).

Excluding 10% of the respondents who had said that they did not use any preventive measure, all other respondents were asked to comment on the efficacy of the particular measures they were currently using, or had recently discontinued using. Table 4.17 shows what the people of Bombay and New Bombay thought of the efficacy of the measures they took to prevent mosquito bites and malaria. The ceiling fan, mats, closing doors and windows and mosquito nets were among the measures that people believed were relatively more efficacious measures. Many of them who doubted the efficacy of a bed net in preventing mosquito bites (and thus malaria) qualified their opinion by highlighting the fact that tying a bed net each night was a tedious activity, that the bed

net became stuffy, and sleeping under it was suffocating because of the humidity levels and temperature during most of the year. Besides, mosquitoes still entered the net because nets got holes, or children tend to roll and toss³ around in sleep and throw the net in disarray.

Table 4.17

Table 4.17 showing (in percentages) the perceived efficacy of preventive measure ever taken by households in Bombay and New Bombay.

#	PREVENTIVE MEASURES EVER TAKEN	EFFECTIVE	PARTIALLY EFFECTIVE	NOT EFFECTIVE	TOTAL OF EVER USED
1	Fan on full speed	50	44	6	169
2	Burn cowdung etc	30	49	21	90
3	GoodKnight on machine	46	33	20	84
4	Close doors and windows	44	44	12	68
5	Tortoise mosquito coil	31	52	17	42
6	Mosquito net	56	24	20	50
7	Clean floor with dettol etc	60	20	20	25
8	Flit/Baygon	53	41	6	32
9	Dhoop (Insense stick)	20	47	33	15
10	Set alight "GoodKnight"	48	41	11	29
11	GoodKnight on bulb	56	28	16	25
12	"Odomos" topical applicant	29	47	24	17
13	Others (prophylactic tablets, cover with bedsheet, keep food closed, drink boiled water)	43	32	25	44

Monthly Expenditure on Preventive Measures

What did it cost the people of Bombay and New Bombay to prevent mosquito bites or to take measures they believed prevented malaria? We asked our respondents to tell us in detail how much they spent per month on the preventive measures. The data revealed that excluding 41 households that did not take any measures, a significant percentage (42%) of the households did not incur any expenses because they were taking measures that did not require them to spend money, as in the case of *govariya*.⁴⁷ Out of the 209 households that incurred some expenses (see table 4.18), most of them spent between 32 and 100 Rs per month, depending on whether they used one measure (e.g. mosquito mats) or more than one measure (e.g., Baygon/Hexit - aerosol insecticides/sprays). A few of the respondents claimed that they spent up to 400 Rs per month on the measures they believed prevented mosquitoes from biting and thus malaria.

Table 4.18

Table 4.18 showing (in percentages) the monthly expenditure of the people of Bombay and New Bombay on preventive measures against mosquito/malaria.

City

EXPENSES INCURRED ON PREVENTIVE MEASURES PER MONTH	BOMBAY	NEW BOMBAY	TOTAL (FOR BOTH THE CITIES)
No expenses	42	34	38
5-30	14	19	16
31-100	19	41	30
101-400	6	4	5
Can't say/Don't know	1	-	1
Don't use any measure	18	2	10
Total %	100	100	100
N	200	200	400

⁴⁷ None of the respondents mentioned the cost involved in running the ceiling fan for long hours as a measure to ward off mosquitoes.

Awareness Regarding Municipality's Malaria Prevention Measures

We asked our respondents whether they were aware of the local municipal corporation's malaria prevention activities in their neighborhood.⁴⁸ The data (see table 4.19) revealed that most of the respondents in Bombay and New Bombay were aware of at least one antimosquito/malaria activity of the municipal corporation, and several of them were aware of more than one activity.

Table 4.19

Table 4.19 showing (in percentages) whether the people of Bombay and New Bombay were aware of the various activities of the local municipal corporation pertaining to malaria.

City

ACTIVITIES OF MUNICIPALITY	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
Fogging	73	81	77
Blood Smear and Tablets	50	86	68
Spraying Oil in Gutters	42	63	53
Spraying DDT	14	18	32
Keep Gutters Clean	8	12	20

Table 4.20

Table 4.20 showing (in percentages) the perceived efficacy of the people of Bombay and New Bombay about the antimosquito/malaria activities of the municipality/municipal workers.

City

HOW EFFECTIVE WERE THE ACTIVITIES OF MUNICIPAL WORKERS	BOMBAY	NEW BOMBAY
Effective	26	14
Not Effective	34	41
Partially Effective	21	39
Can't say/Don't know	19	6
Total %	100	100

⁴⁸ As noted elsewhere, in New Bombay the local people found it difficult to distinguish workers who belonged to the Government of Maharashtra's malaria program from those who were NMMC's employees or Kalpataru worker in New Bombay.

The data also revealed that while 50% of the respondents believed that the municipal measures and the work done by the municipal workers was at least partially effective, others either believed that the measures were not effective or held an ambiguous opinion (see Table 4.20). Many respondents from Bombay, especially in the Chandivali quarry area, were appreciative of the antimalaria tablets given by the municipal workers. Others believed that fogging, oiling and spraying of powder (BHC) was successful in reducing the number of mosquitoes, but they felt that the effect of these measures was short-lived. Few others mentioned that the municipality's system of a blood smear was effective since it helped them to know whether they had malaria or not. Among the respondents who doubted the efficacy of the municipal measures, most of them gave more than one reason - specifically, municipal workers were lazy and irregular in fogging, oiling, and putting the powder (BHC/DDT) in their locality, that fogging was restricted to only the main roads/streets and the gullies were ignored. Moreover, fogging was considered ineffective in high rise apartments. A few alleged that the municipal workers were corrupt and demanded money from the local people before they agreed to do their work.

Examples of how the people of Bombay and New Bombay conveyed their positive and negative sentiments about the work of municipal workers in their neighborhood are given below.

In Bombay, Mrs. Leelabai, a 30 years old lady who worked as a quarry worker in the Chandivali quarry area said:

"When the malaria worker gives us tablets, we become all right. His tablets are very powerful, and bring weakness and giddiness, but then we get cured of malaria."

In New Bombay, Mrs. Bhavana, a 32 years old homemaker from Belapur village, said:

"The tablets given by malaria worker are very powerful therefore we feel faint and feel like vomiting. But we trust the medicines given by malaria workers. They are good. I also tell others in the village to take malaria medicines from the malaria worker, but people think that "free medicine is useless," and spend money at a private doctor unnecessarily.

Commenting on the efficacy of the antimalarial activities of the municipality in the Chandivali quarry area, Mrs. Durgabai had this to say:

"When the municipality workers come and do the fogging, mosquitoes disappear for two days, but they return in larger number. So we don't allow the fogging man to spray the smoke in our homes. We close our doors when he comes."

Mrs. Jijabai, a 40 years old homemaker from the same quarry area in Chandivali said:

"Diesel marne se dimag chad jaata hai, usse chakkar ata hai, is liye hum ghar mein dava marne nahi dete (When the municipal workers spray diesel (pyrethrum/fenthion etc.), I get a headache and get dizzy, therefore I don't allow them to spray the medicine inside my home.)"

In New Bombay, Mrs. Farida, a 28 years old homemaker from Belapur village, said:

"Malaria workers come here with their fogging machines. They do the fogging only on the roads and not inside our houses. They put oil in gutters, and spray the fog inside the gutters, because of which mosquitoes from gutters escape to avoid the smoke and enter our houses. If we insist that they (malaria workers) come and do the fogging inside our houses, they arrogantly refuse and defy us to lodge a complaint against them in their office. There is only one worker who comes regularly, but he too gets tired doing the work all alone."

Mrs. Chautibai, a 34 years old homemaker from the Mhape slum in New Bombay made the following complaint against the local malaria surveillance worker:

"When the malaria worker (Mr. S.K) comes to our house to ask us about fever in the family, he grumbles and says that although he goes house to house, he gets nothing in return (no incentives). Last month when he gave me the malaria tablets, he asked me for money. I got very angry with him and retorted. "You are a government worker. These tablets are to you by the government to be given to us free of cost. How can you ask me to pay for these free tablets?" There are some

people who pay the malaria worker some money in return for the tablets. He also offers to give injections to people who want them, and takes 10 Rs per injection."

A similar sounding complaint against the malaria surveillance worker's careless attitude was noted during a FGD conducted in the neighboring slum. Mrs. Sarojini, a 32 years old homemaker from Mhape slum said:

"The malaria worker had come one month ago. Earlier, he used to write something on our doors (malaria house #), but now he does not do that. When we used to call him, he would snub us and go away. He used to offer injection for 10 rupees. Mr. B. (the malaria worker) does not even give tablets to any one. If we ask him for tablets, he says "Why don't you go to a doctor instead of hopelessly lying down like that?" Since he is so rude to us, we are afraid to ask him to give us malaria tablets." (Mhape slum FGD - Women's Group).

Potential of People to Participate in Anti-Malaria Programs

Given the often cited importance of community participation in antimalaria programs, we wanted to get a sense of the potential of the people in the research sites to engage in community participation. Our concern surrounded the fact that although the majority of the respondents in Bombay and New Bombay had mentioned malaria as their primary health concern, there was no evidence that they had made any worthwhile attempt to tackle the problem at the community level. Therefore, we asked questions that were to give us a sense of the level of social cohesion that existed in the neighborhoods where we conducted the research.

Nevertheless, we asked our respondents whether people in their building/residential complex/ locality normally came together on social issues. Most of the respondents (86%) said that nothing of that sort happened in their locale, in that people in their neighborhood were poorly inclined toward community participation or for that matter doing something together to control the

malaria problem. Only 16% of the respondents said that people in their locality did come together to do something about an issue jointly, provided it affected their everyday life such as making financial contributions to get someone to clean the drains in their vicinity, forming a social committee which engaged in activities like writing to the municipal Ward Officer to draw his attention to the garbage problem in their locality. The remaining 3% of the respondents held an ambivalent opinion. The majority (50%) believed that people in their locality had become self-centered (*swarthy*) - villagers and slum dwellers were not united because there were too many migrants, while others in nodal areas/apartment complexes believed that people simply did not have the time for such activities. Overall, the scenario concerning community participation in the research sites was not very encouraging.

Whether the Malaria Situation Will Improve in the Coming Years

Our informal discussions with the people of Bombay and New Bombay in the research sites indicated to us that a deep sense of uncertainty prevailed among them with reference to the malaria situation in the coming years. We probed in much detail what people believed the malaria situation was going to be like in the coming years - an index of their level of optimism and pessimism. The nature of the responses received are depicted in table 4.21.

Table 4.21

Table 4.21 showing (in percentages) whether the people of Bombay and New Bombay believe that the malaria situation will improve in the coming years.

WHETHER THE MALARIA SITUATION WILL IMPROVE IN COMING YEARS	City		
	BOMBAY	NEW BOMBAY	BOTH CITIES COMBINED
Yes	36	26	62
No	36	47	83
Will remain the same	14	32	46
Can't say/Don't know	114	95	209
Total	200	200	400

The reason why many of the respondents were pessimistic about the malaria situation improving in the immediate future was because they believed that it was unlikely that population, pollution and dirt in their neighborhood would decrease - factors they believed had exacerbated the malaria problem. Moreover, they believed that malaria workers will continue to be lazy, they will not do their work efficiently, so mosquitoes will continue to breed and increase in number, and the problem of malaria will only worsen. Only a small number of the respondents were optimistic about the situation and believed that things might improve because people had started taking prompt treatment, construction activities had reduced, and therefore the malaria situation will automatically improve.

Examples of why the people of Bombay and New Bombay were optimistic or pessimistic seems in order.

According to Mrs. Geeta, a 28 years old homemaker from Malabar Hill, Bombay:

"During the 'plague' everybody came together and took initiative for preventive action.⁴⁹ They enthusiastically reported about dead rats in their locality to the municipality, but they have not taken any collective action for malaria so far, may be because they believe that malaria doesn't cause death. Since the municipality is not doing anything about it, and the people also don't understand how important it is for them to do something about it, malaria will remain like this."

Mr. Imam, a 40 years old quarry worker from the Chandivali quarry area said:

"Malaria will increase in the coming years. Unless the government does something about it, malaria will not reduce in this area. We can at the most keep our house and surroundings clean, beyond that what else can we do? Everyone in this locality is preoccupied with their own problems. They are busy with their work throughout the day, so where is the time for them to do something about this malaria problem. We have heard that within one year, this area (our huts etc.) will be demolished. This is private land, so municipal workers don't come here to pick up the garbage."

Justifying her pessimism regarding the malaria situation in the coming years, Mrs. Indubai from New Bombay said:

"No one does anything to control the malaria problem in this area. Garbage and filth continue to increase. Gutters are choked. If two people maintain cleanliness, and ten people continue to keep their surroundings dirty, what is the point? I tell my neighbors to maintain cleanliness, but they retort by saying "What have you got to do with it...is this ground your property?" Thus, as long as garbage and dirt continue, malaria will continue to be like this."

According to Mrs. Mandakini, a 30 years old homemaker from a village in New Bombay:

"People in this village have unhygienic habits. So even if the municipality does something to control malaria, their work gets nullified because of the villager's lifestyle. Besides, people in this village (the original inhabitants) have lots of money. They don't go to the municipality to complain about malaria. They don't

⁴⁹ In August 1994, there was an outbreak of pneumonic plague in the city of Surat. By September end, there were reports that the plague had arrived in Bombay. The people of Bombay and the Municipal Corporation of Greater Bombay responded to the threat with varying levels of panic and concern (see Madan 1995).

understand each other. They blame us (tenants) by saying that we are dirty and we are the cause for malaria in the village. No one listens to anyone here. Malaria will increase in the future. It is impossible for all *sudharna* (developments) to take place. Dirt will increase. The *kolis* throw their left over fish on the road side, which rot and cause *jantu* (germs)"

Nevertheless, we asked all our respondents "What according to you should be done so that malaria in your area disappears?" Most of the respondents gave multiple suggestions which included the need to give proper health education about malaria to the people, that the municipality should carry out its fogging and oiling activities more often, that the municipality should open a dispensary in their locality (particularly the people of Chandivali quarry area), increase its malaria surveillance staff, give prophylactic tablets to people, provide basic amenities to the people, etc.

In our effort to get a balanced perspective on the malaria problem, we interviewed a few of the Government of Maharashtra (CIDCO) malaria workers on their role in controlling malaria in New Bombay.⁵⁰ Commenting on their crucial role in keeping the malaria under control, and the barriers they face in their surveillance work, a malaria workers who had been doing the same job for the past 30 years summarized his perspective in the following words:

"There are so many private pathological laboratories in New Bombay. Many of them show only "malaria parasite" in the blood report, so how can the doctor give the correct treatment (i.e. *vivax* or *falciparum* and what stage the parasite's development is noted)? I am 100% confident that our medicines (chloroquine) are effective, and this talk about resistance is not true. In 1966, they (malaria workers) used to do regular fogging. When the spraying was done properly, mosquitoes used to die. In 1984, the vertical program on insecticides was still on. Then, full malaria meant high fever and shivering. Now our area has increased and so also the population that we have to cover. Surveillance has become very difficult. Anyway, our malaria surveillance in New Bombay reaches less than 30% of the

⁵⁰ A meeting was held with the GOM (CIDCO) malaria workers in Konkan Bhuvan, Belapur on October 7, 1995.

population. If we go to well-to-do people's houses, they slam the door right on our face. There are 90 health workers, and 32 malaria workers. 100% of the people whom we go to for surveillance give us their blood smear because it's got into their head that they definitely have got malaria. Because targets are given, only 35% of the work gets done. Five percent of the smears are bogus. So much money is being spent on malaria control in Maharashtra. There are so many media channels. Health education in malaria control is very important. Why can't the government use these media to educate the people on malaria? Malaria in urban areas is the only vertical national program. All other programs are multipurpose. Let me tell you - If we stop our surveillance work even for one month, hundreds of people in New Bombay will die of malaria. They are surviving today only because thousands of our tablets keep going into their stomachs."

In summary, this chapter reviewed both quantitative and qualitative data on the lay interpretations and response to malaria in Bombay and New Bombay. Except for A and D wards in Bombay, most of the respondents from the other research sites believed that malaria was a common illness in their neighborhood, and that its intensity had significantly increased during the past two years. People were remarkably familiar with the typical symptoms of malaria and were able to make a distinction between malarial fever and other illnesses complicated by fever. Explanatory models of the people of Bombay and New Bombay about malaria incorporated mosquito as a causative agent, but they made no distinction between the day-time biting culex mosquitoes from night-time biting anopheles mosquitoes. Equally important in their explanatory models were other factors - general environmental degradation, accumulation of garbage and blocked drains - sites that attracted mosquitoes. People also blamed other social groups for bringing malaria into their neighborhood. In Bombay, the wealthy people blamed the slum dwellers and "unhygienic" servants, and the natives of villages in New Bombay blamed the migrants and CIDCO's inefficiency as the cause for all the malaria in the neighborhood. In New Bombay in particular, people believed that malaria was also

transmitted from one person to another by means of a healthy person inhaling the *vaas* (smell/body odor/breath) of an infected person. Importantly, regardless of their socioeconomic status, most of the people believed that no one was particularly vulnerable to getting malaria - in that anyone could get malaria regardless of age or sex. However, in terms of "degrees of vulnerability," they believed that those who were constitutionally and nutritionally weak were more vulnerable, but this "weakness" has little to do with the age or sex of individuals. The illness stories told by the people of Bombay and New Bombay encoded the reality that households often experienced multiple episodes of malaria simultaneously. In terms of the meanings that they attached to malaria, it meant far more than a disease to them. Malaria epitomized suffering, mental agony, economic hardships, disruption in the everyday life, and often impending death. While past experience with malarial episodes might heighten their symptom sensitivity, repeated attacks of malaria made illness management difficult and complicated. Self-medication was often the first resort, but for various reasons people preferred to resort to a private practitioner for treatment albeit it was expensive to do so. Dissatisfaction with the public health system was a common issue for the people of Bombay and New Bombay to choose an alternative that was expensive. Anti-malaria therapy in these places (particularly in New Bombay) often constituted expensive modes that included injections and I.V. saline drips. Malaria therapy being expensive, most people often resorted to borrowing money from extra-familial sources.

In terms of the mosquito prevention measures, the majority relied on the ceiling fans and technical fixes such as "GoodKnight,". Whether they were conscious of using these measures

for preventing malaria, or primarily to ward off mosquitoes because of their nuisance value, was unclear. The extensive use of technical fixes in a sense represented a trend where people preferred to manage malaria at the individual and the household level rather than at the community level. Given the proliferation of such expensive technical fixes in the market that have de-emphasized the importance of community participation in vector control, the feasibility of measures such as impregnated bed nets seems improbable. Importantly, in designing urban malaria control programs, it must be borne in mind that the benefits anticipated by those who design the interventions, may not be apparent to the community and instead outcomes that are immediate and tangible might receive greater importance. In other words, interventions which are congruent with local beliefs regarding the etiology of the illness, might receive a more enthusiastic response than interventions the benefits of which are not obvious.

CHAPTER V

PRIVATE MEDICAL PRACTITIONERS, PHARMACIES AND MALARIA

The role played by the commercial private health sector¹ in the prevention, treatment and control of malaria is remarkably the least documented facet of the urban malaria problem. With a few exceptions, researchers, public health specialists, malariologists, and planners of chemotherapy strategies for malaria have paid little attention to private medical practitioners and private pharmacies and their role in the treatment and control of urban malaria (Snow *et al.* 1992; Breman and Campbell 1988; Foster 1991; 1992; Garg *et al.* 1994). In the developing world, recourse to pharmacies and private medical practitioners (General Practitioner) constitutes part of the natural history of fever treatment in most communities. This is particularly true in urban India where the medical system is marked by a proliferation of pharmacies and private practitioners with a range of qualifications (Uplekar and Cash 1991; Bhat 1993; 1996; Nandaraj 1994; Yesudian 1994).² The popularity of private practitioners in Bombay and New Bombay with respect to the treatment of malaria was also conclusively documented in the foregoing chapter. Most of the people interviewed for the study indicated an overwhelming preference for private practitioner as

¹ It is often assumed that the private health sector provides more efficient services and offers higher quality alternative to public sector providers and a way to increase overall resources available in the health sector. But because the private sector is not regulated, and there are few official data sources on its size and composition, the extent to which this assumption holds true is not known (Berman and Rose 1996, p142).

² In Bombay alone, there are an estimated 20,000 qualified doctors of which 14,000 are private practitioners. Most of them are GPs and others are licentiates and specialists. Problems pertaining to the dubious qualifications and unethical practices of private practitioners in Bombay have been well documented. For example, Nandaraj (1994) found that many clinics in Bombay are run by those who once worked as helpers, compounders or assistants for other doctors for a period of time and picked up the skill in the process. Furthermore, as in Bombay, in most major cities of India, there exists what is termed as "cut-practice," wherein, for referrals made, a part of the fee charged to the patient is given to the referring doctor. A practitioner gets a cut if he or she refers a patient to a consultant, hospital/nursing home, laboratory, diagnostic center, etc. Cut-practice inevitable leads to unethical and unnecessary investigations, referrals, hospitalization, high costs, etc. (Nandaraj 1994). The growing dissatisfaction with the services offered by the private sector, and increases in medical negligence cases, have attracted the attention of the consumer movement in the country. Private medical practice has now been brought under the Consumer Protection Act (COPRA) 1986 (Bhat 1996).

against a municipal or a government dispensary for treatment of malaria.³ Lack of faith in the medicines given by the municipal workers, "exploitative" and discourteous behavior of the municipal and government health staff toward the patients, inconvenient clinic timings, and the lengthy waiting time, were among the most common reasons why people preferred to go to a private practitioner and not use the municipal or government health facility. Easy accessibility to medical care, effective treatment, convenient timings and the personal care shown by the practitioner to the patient ("family doctor"), were the most attractive characteristics of private practitioners. Notably, the relative high cost was not a dissuading factor in the preference for private practitioners.⁴ The propensity toward private practitioners expressed by most of the respondents in this research was corroborated by our empirical observations in several clinics.

The focus of this chapter is on the private practitioners and privately owned pharmacies in Bombay and New Bombay with a view to highlight the important role they play in malaria treatment, control and prevention. Background data about private practitioners and their clinics, observational data gathered at the site of private practitioners' clinics, complemented by informal interviews with patients waiting to see the practitioner are reviewed first. This is followed by a discussion on three other principal data sets - interviews with a sample of 48 private practitioners about malaria related issues, monitoring of malaria related drug sales pattern in a sample of 8

³ This is not to suggest that private practitioners were necessarily "popular" or cherished in the sense of being well beloved for the people of Bombay and New Bombay. Many of the people whom we interviewed for the study were highly critical of the "exploitative" attitude and practices of their local practitioners, but left with little or no worthwhile alternative such as an efficient and less expensive public health facility, they ended up going to a private practitioner, with whatever the consequences.

⁴ It is unclear whether this is indicative of a "willingness to pay" or it reflects a situation where people in any case choose to go to a private practitioner even if it involved borrowing money from someone or pawning valuables if the situation so demanded.

pharmacies - 4 in Bombay and 4 in New Bombay, and exit-interviews with 40 customers who had come to the pharmacies for purchasing antimalarials - 5 at each of the 8 pharmacies. The chapter is divided into three major sections. Section I documents the observations we made at the clinics, Section II focuses on the practitioners, and Section III focuses on the role of private pharmacies in malaria control.⁵

Section I

Overview of Private Practitioners in Bombay and New Bombay

Alongside the in-depth interviews with the people of Bombay and New Bombay, we interviewed 48 private practitioners on a range of issues concerning their engagement in the malaria problem in Bombay and New Bombay.⁶ In Bombay, most of the practitioners who were interviewed, practiced in locales that had a middle and high income profile. In New Bombay, of the six practitioners selected from each of the municipal wards, two each practiced in a slum, village and nodal area. All the practitioners who were interviewed had their practice in vicinity of most of the respondents interviewed for this research. Outlined below is a brief profile of the sampled private practitioners.

Training and Practice

The majority of the practitioners (78%) interviewed for this study were males, and the remaining 22% were females. Their average age was 35 years. In terms of their formal training and

⁵ It may be noted that a detailed study of what transpires at the site of pharmacies in Bombay and New Bombay in the context of malaria control was beyond the scope of this study. Therefore, very limited data were collected at the site of the pharmacies to get a preliminary sense of the situation. An in-depth understanding of the role of pharmacies in urban malaria control would require a separate study altogether.

qualification, 37% held an M.B.B.S. degree besides other certificates and memberships, 19% held a B.A.M.S. degree, 15% held a B.H.M. degree, and the remaining 27% were either qualified as B.U.M.S., D.A.M.S., D.H.M.S., C.E.C.H., G.F.A.M., L.C.E.H., M.C.P.S., M.F.A.M.⁷ ⁸ Most of them (85%) had studied up to the 12th grade before pursuing a degree in Western (allopathic) medicine, ayurvedic or homeopathic training. About 14% of them held a B.Sc degree before choosing to pursue a career in medicine. Significantly, 85% of the practitioners had not displayed any of their credentials, degree certificates, diplomas, etc, on the walls inside their clinics. The remaining few (15%) had displayed either their medical degree/certificate, practicing license, or certificate indicating membership to a professional body. More than half (54%) of the practitioners held a membership to a professional body. The remaining 46% did not have an affiliation to any professional body. Of those who held a membership, most of them were members of the local Indian Medical Association (I.M.A.), and the remaining were affiliated to an equivalent professional body comprising ayurvedic or homeopathic practitioners.

The majority (52%) of the practitioners had been in the profession for ten years or less. The remaining 48% had been practicing medicine for between 11 and 50 years. Twenty-three percent had been practicing in their present clinic/locality for two years or less. Forty-one percent were

⁶ Fifty percent of the practitioners were interviewed in Bombay, and another 50% were interviewed in New Bombay. Of the 24 each practitioners who were interviewed in Bombay and New Bombay, an equal number of practitioners - 6 were interviewed in each of the eight municipal wards (research sites).

⁷ M.B.B.S. Bachelor of Medicine and Bachelor of Surgery; B.H.M.S. Bachelor of Homeopathic Medicine and Surgery; B.A.M.S. Bachelor of Ayurvedic Medicine and Surgery; D.A.M.S. Diploma in Ayurvedic Medicine and Surgery; D.H.M.S. Diploma in Homeopathic Medicine and Surgery; B.U.M.S. Bachelor in Unani Medicine and Surgery.

⁸ Concerned about the proliferation of unqualified practitioners in New Bombay, the health authorities of the New Bombay Municipal Corporation had recently initiated measures to "stamp out quacks" from its administrative area, but efforts in this direction had thus far met with little or no success.

practicing in their present clinic for between 3 and 10 years, and the remaining 35% had a practice in the present locality for between 11 and 50 years. Significantly, the majority of them were practicing in their present clinic ever since the day they first started their practice. Most of them practiced only in one clinic. Only 13% were practicing in more than one clinic. Forty-eight percent of the practitioners owned the clinic premises where they practiced, and the remaining 52% practiced in rented premises. Most of those who owned their clinic premises were practicing in Bombay. Those who practiced in rented premises, paid rents ranging from as low as 300 Rs per month to as high as 3,000 Rs per month. However, the average rent paid by a private practitioner in New Bombay was around 1000 rupees per month, while those in Bombay paid a higher monthly rent - about 2000 rupees, but the amount varied with each locale and was also contingent upon the number of years the practitioner has had his or her practice in the present premises. Older practitioners typically paid low rents that were left unadjusted for several years.

Typical business timings of most practitioners in Bombay and New Bombay are between 10.00 a.m. to 1.00 p.m. and 6.00 p.m. to 9.30 p.m. Business timings, however, varied with each season, and were contingent upon whether the practitioner had his practice in one or more places.⁹

Except four practitioners, the majority (92%) of the sample practitioners, had hired at least one part-time or a full time lady or a young boy to look after the everyday chores in the clinic such as, sweeping the floor, filling the water tank, filling injections, dispensing medicines, collecting fees, monitoring the patients, etc. A significant majority of the practitioners had employed either one

or two young persons - males and females, as assistants/apprentice to the practitioner. In one clinic in the low income area of Bombay, the practitioner was helped by as many as six young women whom he claimed were being trained in their nursing job.

Clinic Ambiance

Using a set of criteria we judged 50% of the clinics as "spacious," in terms of the size and "volume" of the clinic - physical spaces and space available in proportion to the average number of patients who visited the clinic per day, and the remaining 50% of the clinics were judged as "congested beyond doubt" - of which 7 were judged as "terribly congested, crowded and suffocating."¹⁰ Fifty-two percent of the clinics were single rooms partitioned into two sections - one for waiting patients and the other for the practitioner and his examination table. The remaining 48% had either three or four rooms. In terms of availability of sufficient light inside the clinic, in 79% of the clinics, the lighting was considered adequate, while in the remaining 21% of the clinics, the lighting was poor. Similarly, 67% of the clinics had adequate ventilation, but the remaining 33% of the clinics had poor ventilation. As for availability of running/tap water inside the clinic, this facility was available in 63% of the clinics, but not in the remaining 37% of the clinics. In such clinics, practitioners arranged for water storage in a small tank, or were entirely dependent on some temporary source of water, usually a small barrel filled with water.

⁹ During the peak malaria season in New Bombay for instance, it is not uncommon for some of the practitioners to stretch their business hours till mid-night and beyond to cope with the enormous daily client flow.

¹⁰ Most of these clinics were in New Bombay. We witnessed on several occasions clinics where several patients were lying down on the floor, with a drip saline being administered. Such conditions made it difficult for us to sit inside the clinic and make our observations, as we often felt that our presence only added to an already stifling situation.

The typical furniture in a private practitioner's clinic in Bombay and New Bombay comprises one or two wooden benches, occasionally cushioned for waiting patients, a table and a chair (usually a revolving chair) for the practitioner, a³ chair or a revolving stool for the patient while presenting symptoms, a spare chair if the patient is accompanied by a family member, a high table on which the patient is told to lie down while being examined or given an injection, and a step up stool for the practitioner to increase his height while examining the patient. In addition, in some clinics, the practitioner has a wall cabinet or a small wooden cupboard, an additional table to store/keep medicines. In clinics with a dispensing facility, there is additional furniture - usually a closet for the compounder/ apprentice to dispense medicines to the patients and collect the practitioner's consultation fees.

Client Flow Patterns

Practitioners were asked to provide an estimate of the number of patients they saw on an average per day. Most of the practitioners estimated that they saw around 30 patients per day. While 48% estimated that they received between 5 and 30 patients, 42% received between 35 and 60 patients, and the remaining 10% estimated that they received between 65 and 100 patients per day on an average. Patients' attendance in clinics, however, varied across the seasons, with the monsoons bringing the maximum number of patients to their clinics. Furthermore, the number of patients who attended a practitioner's clinic, had much to do with whether the practitioner worked in the morning hours and in the evening, and whether the practitioner also had a practice in another locale. In terms of the seasonal distribution of patients' attendance, most of the practitioners estimated that the maximum number of patients attending their clinics during the

peak (febrile illness) season was between 50 and 60 patients per day. A small number (15%) claimed that during the peak season, they received in the excess of 100 and 150 patients per day.

The majority of the practitioners (60%) interviewed for this study claimed that they did not offer their services on credit. The other 40% of the practitioners said that they did give credit, but frequently, this facility was offered only to known and regular patients. Most of the practitioners who did not give credit, qualified their statement by saying that if they had to treat a patient who was extremely poor, rather than giving treatment on credit, they dispense the physicians' samples that medical representatives (detailers) give them as part of sales promotion. Some practitioners who were "family practitioners" maintained a book of accounts documenting the charges to their patron patients. However, not all practitioners accepted fees directly from their patients. A few of them received their fees through their assistants who collected the fees from the patients on their behalf. Out of the 48 practitioners only 42% said that they paid home visits if called upon, and the visitation fees ranged from as low as 10 Rs in the slums and villages in New Bombay to as high as 200 Rs in the high income locales in Bombay.

Practitioner Fees

Most practitioners charged an average of 20 Rs to their patients if only medicines were dispensed or prescribed. This was inclusive of the consultation fees that is rarely charged to the patient exclusively. A few practitioners whom we interviewed in Chandivali, Bombay and Turbhe slum, New Bombay charged a fee of as low as 5 Rs to their patients. Practitioners also had a fixed rate for each injection, although in some cases the practitioner charged the patient an extra 10-15 Rs



for the injected drug.¹¹ In the high income locale in Bombay, the cost of each injection was approximately 50 to 60 Rs. If the injectable drug was expensive, usually the patient was advised to purchase it from the local pharmacy. Few practitioners charged a consultation fee to their patients for writing prescription, and the amount was between 15 and 50 Rs for each consultation

Practitioner - Patient Interaction at the Site of a Clinic¹²

In order to document "what goes on" at the site of a private practitioner's clinic, we made intensive observations with repeated visits to 16 clinics - 2 in each of the eight municipal wards in Bombay and New Bombay.¹³ We spent a minimum of 2 hours in each of the 48 clinics. Clinics selected for the detailed observations were visited on three different occasions.¹⁴ Few observation sessions lasted for more than 4 hours at a stretch. Observations were conducted by the PI and the research team in pairs of two at the site of a clinic. Particular attention was paid to document what occurs in the clinic between the practitioner and the patient - how patients presented their symptoms to the practitioner, the typical questions they asked, and in turn, what practitioners asked their patient, particularly those reporting fever, and the advice they gave. We also made notes on the patients waiting to see the practitioner and recorded the interactions that took place between them.

¹¹ Issues surrounding I.V. drip salines, including practitioner charges are discussed in detail under a separate section later in the chapter.

¹² There is an enormous volume of sociological and medical anthropological literature on a range of theoretical issues pertaining to doctor-patient relations. In this study, however, we had delimited our scope to only select aspects of the interaction.

¹³ Our efforts to document the practitioner-patient interactions in all the sampled clinics did not meet with much success, as several practitioners, particularly those from the high income localities in Bombay did not allow us inside their patient examination room, for reasons of maintaining the patient's confidentiality. Therefore, as will become evident, a bulk of the text data in this chapter reflects the perspectives of the practitioners from New Bombay, and views of the practitioners from Bombay have been considerably under-represented.

Few of the observations we made inside the clinics were revealing. Most significantly, we rarely came across patients who asked questions about their illness identity to the practitioner. Questions that were asked generally pertained to drug schedule and dosage, duration, etc. Most of the patients left it to the practitioner to tell them about their illness - and also to label their illness. Apparently, several of the fever patients that we observed already knew that they were suffering from "malaria," because their symptoms corresponded with their past experience with their illness. Such patients were not interested in finding out what had happened to them, but were chiefly interested in the practitioner's medicine or prescription.

The ambiance in most of the clinics was marked by silence. Hardly any conversation took place between waiting patients and accompanying relatives. Regardless of the locale in which the clinic was sited, in almost all the clinics, there was absolutely no conversation/interaction between patients waiting to see the practitioner in the waiting room. Whatever conversation that did take place, occurred between family members - the patient and the accompanying person.¹⁵

Waiting Patients and Waiting Time

We maintained a record of the number of waiting patients (children, adults - males, females, persons accompanying the patient) during the 2-3 hours observation period in each clinic, and informally interviewed three randomly identified patients or persons accompanying the patient

¹⁴ Observations were conducted for a minimum of one hour in the morning hours between 10.30 a.m. and 1.00 p.m., and in the evening hours between 6.30 and 9.00 p.m. - these being peak times for patients to visit clinics.

about their illness, and opinion about the practitioner they had come to visit. They were asked whether they had come to the practitioner for the first time with their current ailment. Forty percent of the patients had come at least once in the recent past with the same or similar ailment to the practitioner. While occasionally this was a follow-up visit, for others, the illness had recurred after it had been treated once recently.

The total number of patients observed in all the 48 clinics was 668, with an average of 15 patients in each clinic. In 25% of the clinics, between 7 and 30 patients were observed, and in 75% of the clinics, between 35 and 50+ patients were observed. In all, 121 children were observed in 33 clinics, because in 15 clinics, there were no children waiting to be attended to by the practitioner (at the time we made our observations). In 21% of the clinics, there were between 1 and 7 children, and in the remaining 79% of the clinics, at the time of observation, between 9 and 22 children were waiting to be attended to by the practitioner. A total of 250 adult males were observed in all the 48 clinics. In 40% of the clinics, between 2 and 8 adult males were observed, and in the remaining 60% of the clinics, between 9 and 22 adult males were observed. A few of the adult males were not patients waiting to see the practitioner, but were accompanying a family member who was the patient. A total of 297 adult females were observed in 45 clinics, because in 3 clinics, there was not one adult female waiting to be attended by the practitioner (at the time we made our observations). In 44% of the clinics, between 2 and 10 adult females were observed,

¹⁵ Given that malaria had become part of the everyday discourse of the people of Bombay and New Bombay, we figured that clinics would be ideal sites for people to talk about illness related experiences with each other. But what we found was to the contrary. In most of the clinics, patients had to wait for less than 10 minutes before they could see the practitioner, the waiting time being too short for patients to enter into a conversation. Besides, most of the patients who came to the clinics were in such a pitiful condition, that they could hardly open their mouth to tell their symptoms to the practitioner, let alone be in a physical and emotional state for initiating a conversation with co-patients.

and in 56% of the clinics, between 11 and 20 adult females were observed. A few of the adult females were not patients waiting to see the practitioner, but family members who were accompanying a patient.

Of a total of 668 persons observed at the 48 clinics, approximately 30% were there to accompany a family member (occasionally more than one) who was the patient waiting to see the practitioner. Only 40% of the observed persons (patients) had come to the clinic without being accompanied by a family member. We monitored 10 fever patients in each of the 48 clinics to make a note of the waiting time before they were able to see the practitioner, and also how much time practitioners spend with their patients on average.

We found that in 71% of the clinics, most of the patients did not have to wait beyond 10 minutes after they had arrived in the clinic. In 15% of the clinics, patients had to wait for between 15 and 20 minutes, and in another 14% of the clinics the waiting time was 30 minutes. In turn, whatever be the number of patients waiting outside to see the practitioner, or the "announced" seriousness of the case, most practitioners spent five minutes or less with each patient. Very few practitioners who spent eight to ten minutes with each patient, were in no measure more popular than those who hardly spent three minutes with each patient. The average five minutes that the practitioner spent with each patient were typically divided into two or three minutes for exchanging greetings, pleasantries, general talk, and query into symptoms etc. The balance of two minutes was spent on a physical checkup and writing prescription or dispensing medicine with a brief advice on the drug schedule and dosage.

Commonly, practitioners used their communication skills to retain patients' patronage. One form in which this was done was by addressing patients with fictive kin terms suggesting closer ties, such as "*bahu*" (brother) "*tai*" (sister) "*maushi*" (aunt) *kaka* (uncle), "*gaonvalle*" (native colleague), and so on. Most of the practitioners we observed, were "friendly," "reassuring," while a few dealt with their patients in a matter of fact way. Notably a few practitioners did not hesitate to scold their patients for noncompliance - a means of showing concern and retaining patronage.¹⁶ Practitioners were typically very brief in their questions to the patients. Reproduced below is an excerpt from a recorded session of a practitioner's query in a clinic in a slum in New Bombay.

"*Bolo kya hua hai?* (Tell me what has happened?) [*Fever comes*] *Bhukar kaisa ta hai?* (How does the fever come?) [*In the night*]. Since when have you been having this fever? [*Since yesterday*]. Have you eaten any tablets from outside (self-medicated)? [*No*]. Have you been to any other doctor before seeing me? ¹⁷ [*No*]. Is your throat dry? Is your appetite all right? [*No*]. *Injection doo kya?* *Usse jaldi aaram girega* (Shall I give you an injection? You will get relief much faster with that).

During the months that we recorded our observations (September 1995 to January 1996, and end of June 1996 to mid-July), we noted that the majority of the fever patients observed at the 48 clinics were diagnosed or treated for malaria or suspected malaria. Only a small number of patients were diagnosed for "viral" fever. This was almost invariable in New Bombay. Fever patients reported, either in monosyllables or brief sentences, specific and nonspecific symptoms, ranging from fever, bodyache, cough, nausea, loss of appetite, shivering, weakness, malaise,

¹⁶ Nonetheless, we observed one practitioner in a village in New Bombay who discriminated his patients. For instance, he rarely touched some of his patients, let alone do a checkup. He explained: "*Bada ganda lagta hai un logon ko haat lagane se bhi, is lihe, sirf unka taklif poochta hun aur dava likh de ta ho.*" (I feel dirty touching them, so I ask them a few questions about their illness and write prescription). Most of the patients who came to see this practitioner were laborers who worked on the nearby construction sites.

dizziness, aching, watery eyes, bitter tongue, vomiting, "*Doka lai jaam jahalai*," (head has got "jammed," become heavy) and "*kir kir*," (heightened irritability).

Three-fourths (75%) of the practitioners included in the study were dispensing practitioners, in that, in addition to giving injections and I.V. saline drips, they dispensed non-parental drugs (paracetamol, B-complex, vitamin tablet/capsule, antimalarials, etc.) to their patients as an indirect means of collecting fees. They wrote prescription in case the drugs were expensive. Only one practitioner whom we interviewed did not dispense any medicine besides an occasional paracetamol, but wrote prescription for all his patients.¹⁸ In the low income areas in Bombay, and slums and villages in New Bombay, we noted that most of the poor and less educated patients who were given prescription, were advised to return to the clinic after purchasing the drugs from the local pharmacy, to show the medicines to the practitioner or his/her assistant who could then explain the schedule and dosage of the drugs.

The "quality" of advice that practitioners gave to their fever patients was highly variable. Most of the practitioners cursorily explained the drug schedule and dosage to their patient and left the detailing job to the assistant(s). The content of the advice pertained mostly to medicine consumption, and rarely about diet and preventive measures. A few practitioners claimed that they did explain the drug schedule, dosage and possible side-effects resulting from the medicine.

¹⁷ Practitioners in New Bombay were particularly concerned about bring symptomatic relief to their patient, and therefore catered to patient demands. They were apprehensive of the "doctor-switching" habits of their patients. They lamented that many of their patients practiced self-medication prior to seeking medical help. As will be shown later in this chapter, in most cases, neither practitioners not patients claimed loyalty to each other.

¹⁸ This practitioner explained that the only reason why he was not dispensing medicine in his clinic was quite simply because he did not have a "compounder" or an attendant who could look after the dispensing routine.

Notably, most of the practitioners advised their patients to continue with their normal diet, but to eat fruits if they could afford, and to drink plenty of "boiled cooled water." However, 27% of the practitioners did not volunteer any advice concerning diet and preventive measures to their fever patients. Moreover, rarely did we observe practitioners volunteering advice to their fever patients on the preventive measures to be taken specifically against malaria. Most of the practitioners said that it was futile to offer any advice other than "maintain personal hygiene," and "keep your surroundings clean" to their patients. A practitioner from Nerul in New Bombay voiced his sentiments over the issue of giving advice to patients in the following words:

"I used to take pains to tell my patients about malaria, but I soon realized that my advice was falling on deaf ears. Giving advice on malaria to the kind of patients (poor laborers) who come to me is like *bhais ke age been bajane ki taraha hai* (its like playing a flute in front of a buffalo - a meaningless act)."

Not all the patients with whom we conducted informal exit-interviews had understood the dosage schedule as the practitioner had explained to them. For instance, in a clinic in a slum in New Bombay, we observed that the practitioner had explained to one of his patients how to take the medicines - dosage and timing, how often each day, after meals, etc. The manner in which the practitioner communicated the message to his patient on how to take four tablets sounded so confusing to us that we were left wondering whether the patient who was poor and illiterate, was able to make any sense of the advice at all.

Majority of the practitioners (56%) rarely advised their patients to go for a blood test to check for the malaria parasites. Others who advised a blood test did so only to patients who presented symptoms that were not distinctively indicative of malaria, patients who were recalcitrant or did not respond to the previous treatment. Most of these practitioners advised their patients to get

their pathological tests done at a specific pathological laboratory in the same locale, with whom they had a "business understanding" (commission - share in the fees collected) or it was a matter of professional gesture.

Commenting on why they rarely advised their patients to get their blood tested, three practitioners from New Bombay had this to say:

"Rarely...they will say *janedo na doctor saab...jo kuch hai likh khe de do na...do din ke baad accha nahi lagega to dekha jayaga...*" (that's okay doctor...be it...for the moment you please write me a prescription...whatever it is... if I don't get relief after two days, then lets see what to do).

"If I advise my patient to go for a blood test, that will be the last time he will come to me!"

"Patients here do not comply with my recommendation for a blood test. Even if I send them to a pathological laboratory for a blood test, they will not go, and instead say *doctor, doosra dava badal kar dekho* (Doctor, why don't you change the medicine and see if that will work?)."

Practitioner saw no point in sending their patients for a blood test for three reasons. First patients who came to see them were so poor that they rarely had enough money to fill the prescription, let alone have the money for a blood test (75-150 Rs). Second, most of the patients presented symptoms that were so clearly indicative of malaria, that a blood test was believed to be redundant, and third, they feared that they would lose the patronage of their patient whose primary concern was symptomatic relief.

The three patients waiting to see the practitioner (all 48 clinics), were asked whether they had seen another practitioner before coming to this clinic.¹⁹ Of the 144 patients who were asked this question, 43% acknowledged that they had come to this clinic after having taken treatment from a different practitioner for the same affliction. The remaining 57% said that this was the first practitioner they had come to see with their ailment. Patients who were asked to give reasons for their preference to see the current practitioner as against other practitioners practicing in the same locality, gave several reasons to justify their choice, such as (a) the practitioner is in close proximity to their homes, (b) they have been traditionally going to this particular practitioner, in that he is a "family doctor," and (c) this particular practitioner's "*haat goon*" is good in that his or her patients get relief from the treatment, and (d) that this particular practitioner was also not very expensive and charged reasonable fees for his treatment.

In summary, this section looked at the background variables of the 48 clinics sampled in Bombay and New Bombay for conducting observations on practitioner-patient interactions. While more than half the practitioners were trained in non-western systems of medicine (ayurvedic, homeopathic and unani), they invariably treated their patients with allopathic drugs. Most of them practiced in an ambiance that was stuffy, dingy and congested, and attended to between 30 and 150 patients per day on average. Patients rarely asked questions to their doctors regarding the identity of their ailment, and in turn practitioners rarely volunteered information or gave detailed advice to their patients. Much of the doctor-patient interaction which lasted for 5 minutes or less

¹⁹ Several practitioners with whom we had preliminary discussions regarding the malaria problem in Bombay and New Bombay averred that malaria had become a complex problem mainly because patients in their neighborhood simply did not comply with the recommended treatment and were in the habit of "doctor-switching."

centered on medicine taking - schedule and dosage of the medicines. A common practice among practitioners of Bombay and New Bombay was to write prescription and ask the patient to return with the purchased medicine to the clinic so that the practitioner or the assistant could explain the schedule and dosage details to the patient. Very few practitioners relied on a peripheral blood smear to arrive at a diagnosis.

With this brief profile of the 48 clinics that we visited in Bombay and New Bombay, and preliminary understanding of the practitioner-patient interactions in the background, the next section discusses the data pertaining to the interviews we conducted with the 48 practitioners on malaria related issues.

Section II

Private Practitioners and Malaria

Whether Malaria Endemic in Bombay and New Bombay

We asked all the practitioners whether, going by their every day practice, they believed that malaria was "endemic" in their city - Bombay and New Bombay. All but one practitioner (from the Lower Parel area in Bombay), averred that malaria had become very common (endemic) in their practice locality. Estimates regarding the number of years, or the year since when it had become a significant public health problem varied with each practitioner. Differences in opinion were noted even among those who were practicing in the same neighborhood or the municipal ward. Their convictions differed with the number of years each practitioner had been practicing in the present locality. Most of the practitioners from Bombay (A Ward, D Ward, F/S Ward and L/N Ward (Chandivali area) suggested that the problem had become "endemic" only since the past

3-5 years. However, practitioners from New Bombay differed significantly from each other in their estimates. Few practitioners asserted that the malaria problem in New Bombay had started as early as in 1982, and that its magnitude had only increased because of the manifold increase in the New Bombay's population (from 100,000 in 1982 to over 600,000 in 1996). As noted earlier, most of the practitioners in New Bombay had started their practice less than 8 years ago, and all acknowledged that going by the number of daily cases they treated, malaria was a significant problem - since the very day they had begun their practice. A knowledgeable senior practitioner from Belapur nodal area in New Bombay explained:

"Malaria in New Bombay started in a big way in 1982. That was after the Asiad Games in Delhi, during which thousands of laborers from various states had congregated in Delhi. There was an epidemic outbreak of malaria in Delhi during the Asiad Games because of the massive construction activities concerning the games. After the games were over and the construction work had halted, thousands of these laborers from the Asiad sites migrated to Bombay and New Bombay in search of work. They found work on several construction sites in New Bombay which was then just being developed. They were carriers of the malaria parasites. These workers came along with them (the parasites) to New Bombay. That was how the epidemic of malaria began in New Bombay in 1982."

Most of the practitioners from Bombay said that between 1992 and 1995-6, of the total number of patients who attended their clinics per day, the proportion of malaria or suspected malaria patients they treated had shot up from as low as 5% to a significant 30%. The proportion, however, varied across the different locales in Bombay. Reflecting on the current trend in the "epidemic proportions" that malaria has reached in Bombay, a practitioner from Lower Parel, Bombay said:

"Mark my words - in a year or two from now, Bombay is going to be another New Bombay (as far as malaria is concerned). It is going to come with a double vengeance in a year or two from now, and if *falciparum* malaria comes, then the situation is going to be a very difficult. If you come to me after two years, don't be surprised if I have put a sign board on my clinic "Malaria Specialist!"

Malaria Diagnosis

All practitioners were asked the question: "How do you normally decide whether a patient who has come to you has got "malaria" or not?" The options were, the practitioner a) relies on clinical symptoms (algorithms) b) relies on symptoms reported by patient c) makes diagnosis by treatment d) relies on blood smear report e) other indications. They were asked to elaborate on the procedure they followed to make a diagnosis of a patient's illness, and to label it as "malaria" or suspected malaria, or otherwise. In response, 6% of the practitioners said that they relied exclusively on the clinical symptoms (algorithms) they notice in the patient, and 4% said that they arrive at a diagnosis exclusively based on the symptoms that their patients reported to them. However, 58% of the practitioners relied on both the above indicators - clinical symptoms they notice in the patient, and the symptoms their patients reported to them. Twenty-three percent said that in addition to the above two "symptoms" indicators, they also make a diagnosis by treatment, and 15% said that besides the "symptoms" indicators, they relied on the patient's blood investigation report.

Most of the practitioners said that they relied on the typical classical symptoms of malaria such as fever, chills, etc., directly observed in the patient, or presented by the patient, to arrive at the diagnoses. However, several of them were quick to add that the profile of malaria had changed recently and they could no longer rely on the classical symptoms of malaria, in that a patient could be asymptomatic, and yet have malaria parasites. Similarly, a patient may exhibit all the classical symptoms of malaria - high fever with chills and bodyache etc., and may yet be afflicted by another labeled disease, typically typhoid or some kidney ailment. A senior practitioner from

Malabar Hill, in Bombay explained how malaria presentations had undergone a transformation over the years. He observed:

"In the early days, my patients used to report shivering with alternate day fever and profuse sweating after the fever had come down. But nowadays, I don't understand it fully, but most of my patients come with complaints like headache, bodyache, loose motions, vomiting and sometimes even dehydration. When I look at their blood investigation report, the report shows malaria parasites. So, the frank symptoms of malaria have changed dramatically over the last two years. Not only that, nowadays it takes much longer to cure a patient of malaria than it used to a few years ago."

Another practitioner from the same research locale, the oldest of the sampled practitioners said:

"There is no guarantee that a suspected malaria patient's blood test will come positive. Sometimes I have to send my patients for a blood test three or four times. And in the rainy season, all fever cases are suspected and treated for malaria. In that season, even if a patient comes to me with a leg injury, I treat him for malaria first!"

Practitioners from New Bombay were vivid in their descriptions about how the profile of malaria symptoms had changed over the years. Speaking of the change, a loquacious practitioner from the Mhape slum,²⁰ gave us an interesting interpretation of the changing characterization of malaria in New Bombay in the following words:

"95% of my patients are malaria patients. Only 5% of the patients come with other complaints. Even I have got bored of having to deal with the same type of patients, and the same disease, and the same treatment month after month. Three years ago when I started my practice here, "Lariago," (chloroquine) was effective in treating my malaria patients. Now chloroquine tablets are simply ineffective. I think people in this area have become resistant to other diseases! There is tremendous chemical pollution in Mhape because of all these chemical factories around, but no one in this area comes to me complaining of cough, cold. It seem that [as compared to malaria] these health problems have become insignificant and not worth going to a doctor for treatment. You see, if I continue with my practice like this for 7 or 8 years in this area, all my medical knowledge will be destroyed because nothing else but malaria comes in my routine practice. I know all the symptoms of malaria given in medical text books, but to date [after 3 years of practice] I have not come

²⁰ This practitioner was trained as an ayurvedic doctor, but invariably practiced allopathic medicine.

across a single patient who came to me with rigors (shivering) and all the classical symptoms of malaria. Academic practice...there is nothing of that sort here."

Another practitioner from the neighboring slum locale in Turbhe Ward, New Bombay had a different version of how things had changed:

"I have been practicing in this slum for the past 10 months [He has his other clinic in the Indira Nagar slum]. I have noticed that the symptoms that my patients come to me with have changed "horribly." Patients come with symptoms like severe headache, bodyache and nothing else - no history of fever, no palpating stomach (spleen), no chills, no other person in the family down with malaria. If I get an MP (malaria parasite) blood test done, I am 100% sure that every such patient will have malaria - even when the "text book" symptoms are absent. I take no chances and treat almost all my patients for malaria. If the medicine I give doesn't cure them (i.e., if they don't have malaria), then it will at least help prevent them from contracting malaria (prophylaxis). Either way it works. Rigors can come even if the patient has UTI, typhoid, and viral fever that also come with chills. I also give a high level antibiotic like Ciprofloxacin or an anti-inflammatory along with antimalarials to my patients. If not anything, it will get rid of all other infections in the patient's body. The patient is going to be all right in a few days anyway, so there is no need to make a diagnosis."

Explanatory Models of Private Practitioners

One of the underlying objectives of the study was to elicit the explanatory models of practitioners in Bombay and New Bombay, concerning the causation (etiology), transmission, treatment, (including the schedule) and the prevention (including prophylaxis) component of malaria. The objective of eliciting the practitioners' explanatory models was to find out what was the "fit" between the lay person's and the practitioners' explanatory models of malaria. According to Kleinman (1980):

Explanatory models are the notions about an episode of sickness and its treatment that are employed by all those engaged in the clinical process. The interaction between the EMs of patients and practitioners is a central component of health care. The study of practitioner EMs tells us something about how practitioners understand and treat sickness. The study of patient and family EMs tells us how they make sense of given episodes of illness, and how they choose and evaluate

particular treatments. The study of the interaction between practitioner EMs and patient EMs offers a more precise analysis of problems in clinical communications. Most importantly, investigating EMs in relation to the sectors and subsectors of health care systems discloses one of the chief mechanisms by which cultural and social structural context affects patient-practitioner and other health care relationships...Structurally...five major questions that EMs seek to explain for illness episodes...are: (1) etiology; (2) time and mode of onset of symptoms; (3) pathophysiology; (4) course of sickness (including both degree of severity and type of sick role-acute, chronic, impaired, etc.); and (5) treatment. EMs differ in the extent to which they attempt to answer some or all of these concerns (Kleinman 1980, p105).

In this context, practitioners were asked: "How do you explain to your patients "what is malaria, how it is caused, and what should be done to prevent anyone in the family from getting it?"

Etiology

Significantly, mosquitoes occupied a central place in the explanatory models of all the practitioners. However, only 12% of the practitioners, all from South Bombay, specified that the malaria causing mosquito (anopheles) breeds in fresh unpolluted water, and that mosquitoes that breed in polluted waters, drains, etc., were nuisance mosquitoes of no consequence to malaria. The true malaria mosquito breeding sites, however, did not feature in the explanatory models of most of the practitioners. Most of the practitioners in Bombay and New Bombay associated the rapid spread of malaria with the on-going massive construction activities in both the cities. However, except two practitioners from New Bombay who suggested that construction activities had something to do with producing mosquito breeding sites (stagnant water etc.), most of the other practitioners associated construction activities with large scale immigration of laborers from other states, who were carriers of the malaria parasite. As one practitioner put it with a tinge of sarcasm, "the construction workers in New Bombay are the real malaria vectors." Several

practitioners identified "unhygienic conditions" as a cause for the increase in mosquitoes, and thus malaria. Few practitioners were unsure about what caused and transmitted malaria.²¹

Types of Malaria

All the practitioners specified that there were two types of malarias predominant in Bombay and New Bombay, namely *vivax* and *falciparum*.²² When asked whether they could make a distinction between a person who has been infected with *vivax* malaria and a person who has been infected with *falciparum* malaria, most of them (83%) said that it was difficult to make a distinction between the two malarias without the aid of the patient's blood investigation report. A small number specified that the symptoms in *vivax* and *falciparum* cases were indistinguishable. Yet, few practitioners said that there were typical/characteristic symptoms of *falciparum* malaria that helped them to decide whether the patient was suffering from *falciparum* or *vivax* malaria.

The practitioner from Mhape slum in New Bombay, whom we had interviewed in great detail, explained his ingenious method of making a distinction between the two types of malarias:

"A patient will come and say "*Doctor, bukhar hai aur thandi lagta hai, moo mein kadvapan hai*" (Doctor, I've got fever and chills, and also the mouth tastes bitter). I cannot ask the patient to immediately come with a blood report, because he will neither have the patience, nor sufficient money to pay the pathologist. So I ask the patient to describe his symptoms, and also make my own observations. If the patient says that the color of his urine is red, and has fever, then I presume that it is a case of *falciparum* malaria, and if he says that the urine is dark yellow, then I presume it to be a case of *vivax* malaria. I prick a pin on the sole of the patient's

²¹ A practitioner from New Bombay asserted that the increase in the number of malaria cases in New Bombay had a lot to do with the sudden increase in the mosquito population over the past few years - a situation engendered by the large scale land reclamation - filling of the *khadi* (swamp), which in effect had disturbed the ecological balance, and had decimated the frogs and other natural predators of mosquitoes.

²² We suspect that many of the practitioners were simply familiar with the two names, and knew little of the technical differences between the two types of malarias that warranted differential treatment regimens and prognosis.

leg, and if the patient jerks his leg outward/forward, then it is a case of *falciparum* malaria, and if he withdraws his leg inside, then it is a case of *vivax* malaria. Nowadays, I give anti-malarials to all my patients who report fever and vomiting sensation. If the patient reports difficulty in urinating and has a *gaat* in the stomach (enlarged spleen), then without hesitation I treat the patient with antimalarials. If the anti-malarials don't work, then I have to give them "Cifran" (ciprofloxacin - a high level antibiotic)."

Others made a distinction between the two types of infections, by way of diagnosis by treatment.

A lady practitioner from Nerul, New Bombay explained:

"If my patient does not respond to "Pyralfin" (pyrimethamine and sulfadoxine), I presume that it is a case of *falciparum* malaria. I give quinine sulfate to such patients. If it is *falciparum* malaria, the patient will respond to quinine, but not to chloroquine."

Treatment Pattern

Most of the practitioners (65%), both in Bombay and New Bombay said that their line of treatment and prescription pattern (dosage/schedule etc.) for malaria had changed "significantly" during the past 2-3 years. Many who claimed that their prescription pattern had not changed (35%) during the past 2-3 years were either from the Bombay side or were those who had only recently started their practice. In terms of the specific changes in the prescribed drug, while the majority of the practitioners from the Bombay continued to rely on chloroquine as the first line of treatment, they had recently started prescribing quinine sulfate, primaquine and occasionally mefloquine.²³ However, practitioners from the New Bombay side, besides prescribing newer brands of the same drug (chloroquine, quinine and primaquine) they had started prescribing

²³ Garg *et al*'s (1994) survey of 40 GPs in Bombay on their prescribing practices with respect to antimalarials revealed that the number of cases treated by practitioners varied from 2-70 per week (during January 1994 and April 1994). Only 5 practitioners used peripheral blood smear for diagnosis whereas the remaining 35 relied solely on clinical features for diagnosis. Though chloroquine was used as the drug of first choice by 21 practitioners, the dose used varied from 2-20 tablets for treatment of an acute attack in adults. Nineteen practitioners prescribed Sulphadoxine-Pyrimethamine as the drug of first choice for an acute attack. The dose used varied from 2-3 tablets as a single dose, and resistance was reported by all practitioners (Garg *et al* 1994).

quinine sulfate either as a first line of treatment or as a follow-up treatment if chloroquine therapy failed to bring relief to the patient. A few practitioners were prescribing "Larium" (mefloquine) to some of their patients who were either recalcitrant or were not responding to chloroquine or quinine therapy. Importantly, as many as 33% of the practitioners had stopped prescribing chloroquine to their patient exclusively, and were resorting to quinine sulfate, Pyralfin as the first line of treatment or were giving it in quick succession with chloroquine or primiquine therapy. Few practitioners had started administering broad spectrum antibiotics such as tetracycline, norfloxacin, ciprofloxacin in combination with antimalarials, often when the patient was suspected to have contracted malaria and "typhoid" concurrently.

Commenting on the changes in the line of treatment for malaria patients, two doctors from Bombay gave their differing observations on the issue in the following words:

"No. My treatment has not changed in any significant manner ever since I started my practice in this area 8 years ago. Oh yes, some doctors say that people have become resistant to chloroquine, but so far I have not come across even a single case that could be called chloroquine resistant. My first line of treatment is chloroquine, and only in the rare event that the patient does not respond to chloroquine, I treat with quinine, but again, this is very rare."

"Resochin, Lariago, Nevaquin, they all work wonders in most cases of malaria. A few years ago, only 4 tablets of Lariago or Resochin were sufficient to cure a malaria patient completely, but now the scenario has changed - at least 10 tablets have to be given - starter dose of 4 tablets, and 2-2- after 6 hours and 1-1 after 8 hours. Nowadays, patients don't suffer from malaria alone, they have other infections too, so when I treat them, I also give them antibiotics like doxycycline, cirpofloxacin, and if patients don't respond to chloroquine alone, I give doxycycline and pyrimethamine and sulfadoxine."

In New Bombay, almost all the doctors claimed that not only had the schedule and the dosage pattern changed, the drugs they were prescribing had also changed, regardless of the brand names. Giving his version of changes that had taken place with respect to the line of treatment for malaria, one of the practitioners who had his clinic in a slum in Turbhe Ward, New Bombay said:

"I have to prescribe different antimalarials for my patients every month. Three months ago, I used to prescribe chloroquine, and patients were responding well. But one month later, they stopped responding to chloroquine. They become chloroquine resistant. So I started with quinine brands, but after one month, they stopped responding to that too. Then I started prescribing Pyralfin (Pyrimethamine and Sulfadoxine), but of late, people have stopped responding even to Pyralfin. Then I started dispensing and prescribing Wysolone (Prednisolone (steroid), a Wyeth product). People say that they have started feeling better with Wysolone. Earlier I used to give chloroquine for *vivax* cases, and quinine for *falciparum* cases, but now everything has become *ulta phulta* (topsy turvey). These days malaria patients don't come with rigors (shivering), but only bodyache and slight temperature. If they present me with these symptoms, then I conclude that it is a case of malaria, and treat them accordingly."

For several practitioners from New Bombay, it was not a question of changing the drug alone, but also the brand names of drugs to address the pragmatics of their practice. A practitioner from the nodal area in Koperkhairane, New Bombay explained his dilemma as follows:

"We [practitioners] have to change the medicines as often as possible (brand names) or else patients tend to think that "each time I go to this doctor, he gives the same medicine. So what is the point in paying him his fees if I can get the same medicine from the chemist shop against my old prescription?" Therefore, we change the brand name quite often."

A similar view was voiced by another practitioner from the Belapur village, New Bombay.

"I write a different brand of the same drug for each of my patients. My brand prescription varies from patient to patient. If I write the same brand for all my patients, the patients will think - 'Oh, this doctor knows only few medicines, he writes the same medicine for all patients, may be because he does not understand our illness properly, so why go to this doctor and waste money. We can buy the same medicine he has prescribed for other patients from the chemist shop and save on the doctor's fees.'" Therefore, I write different brands of the same drug for each

of my patients so that the patient does not understand the "internal adjustments" I make in the prescription. So for some patients I write "Lariago DS," and for others I may write "Malaquin," "Resochin," "Nevaquin," which are all chloroquine products, but I believe that the most effective drug is "Lariago DS."

Given that practitioners in New Bombay were writing expensive drugs to treat malaria, how did their patients perceive the change and respond to the expensive prescribing habits of the practitioners? During our observations in the above practitioner's clinic in the Belapur village, in New Bombay, we recorded the following episode:

Patient (male, construction laborer, 30 years of age) to the Researcher:

"Oh! These doctors have minted lacs of rupees because of only one illness in this area - malaria - malaria and nothing else. They have bought land, buildings, posh cars - all because of malaria. Take my own example, I have been spending at least 200 Rs on an average per month on this doctor.

Practitioner (Annoyed after having overheard the patient- Interrupts the patient):

"How do you say that you spend these 200 Rs every month on me? Tell me in which month did you have to spend 200 Rs because you came to me?

Patient:

"No no! I did not say that you take 200 Rs, but you also write medicines (prescription) that I have to purchase from the medical stores. (Patient disappears and returns after a while). Look doctor, I have bought the medicines you have written. I had to pay 60 Rs. I have already paid you 60 Rs as your fees. Now that adds up to 120 Rs. If I come again after a few days, I will spend another 120 Rs, isn't it?

Doctor:

"But half that money goes into the chemist shop owner's pocket, not in my pocket!"

Patient:

"Yes doctor, I agree, but if you had not written the medicines (prescription), would I have not saved on that 60 rupees? Whatever it is, I have had to finally

spend 120 Rs, isn't it. I am not concerned who the money goes to. I am concerned that the money goes out of my pocket, my earnings."

Popular Antimalarial and Adjunct Drugs

Among the most frequently prescribed antimalarial and adjunct drugs for infants and children below the age of 16, were, in the order of frequency of prescription, Lariago, Malarquin, Nivaquin, Quinine Sulfate, Resochin, Emquin, Rubiquin, Reziz-forte, Amalar, Reziz, Primaquine, Ciprofloxacin, and Crocin syrup (paracetamol). Almost all practitioners claimed that they avoided giving quinine therapy to infants and children. The most frequently prescribed antimalarials and adjunct drugs for pregnant women were akin to those prescribed for infants and children. As with infants and children, most of the practitioners said that they rarely or never resorted to quinine therapy for pregnant women. Most of them were also conscious that primaquine therapy is contraindicated for pregnant women. "Clo-kit" was popularly recommended for pregnant women.²⁴ Among the quinine brands prescribed to pregnant women, the most popular ones were Quinidol, Quininga, Quintor, Quinisol, Emquin, and Reziz-Q. For lactating mothers, adult females and adult males, none of the practitioners said that any of the antimalarials was contraindicated. Most practitioners prescribed chloroquine brands, with "Lariago" being the most outstanding and most popular brand of chloroquine, and quinine and pyrimethamine and sulfadoxine brands to lactating mothers. Other adjunct antacids and antiulcers, and antiemetic and antinauseants were Aciloc, Normadil, etc.

²⁴"Clo-kit," a product of Indoco Remedy, is clearly the most innovative antimalarial available in the market. It comes in a single packet of conveniently divided doses.

Popularity of Injections and I.V. Drip Salines with "Malaria" Patients.²⁵

Injections are medicinal substances *par excellence*. If medicines are tangible representations of healing, then injections are a particularly "marked" form of medicine. They sum up biomedical therapy to such an extent that many people equate getting an injection with getting **real** biomedical treatment...[Furthermore] Injections are ceremonially marked more clearly than other types of pharmaceutical treatment. The preparation of the equipment, the insertion of the needle in to the vial (sometimes the extra step of diluting powder in the vial with water drawn up into the syringe, marking the point of insertion into the skin, and observing the substance being driven into the body: all these formalized acts underlie the taking of medicine more strongly than the simple movement of swallowing pill (Whyte and van der Geest 1994, p149).

During our preliminary field work in the low income areas of Bombay and the slums and villages in New Bombay, we found patients lying down on the floor and wooden benches in several clinics with a bottle of I.V. drip saline being administered to them. We were intrigued by the popularity of I.V. drip salines in New Bombay, a not so common sight in the clinics of Bombay. We probed the 48 Private practitioners in great detail about the popularity of injections and I.V. drip salines in their areas. In response to our questions on the popularity of injections and I.V. drip salines, 75% practitioners acknowledged that injections were very popular with their patients in that, patients regularly demanded that they should be given an injection for their ailment. Similarly, 65% of the practitioners said that I.V. drip salines were immensely popular with their malaria patients.²⁶ Most of those who said injections and drip salines were not very popular in their locality of practice, were from the Bombay side.

²⁵ The popularity of injections in the developing countries has been well documented in the medical anthropological research (cf. Cunningham 1970; Guyer and Candy 1979; Reeler 1990; Wyatt 1984; Whyte and van der Geest 1994).

²⁶ However, the household level data that we discussed in the foregoing chapter had revealed that while injections as part of anti-malaria therapy were certainly very popular in Bombay and New Bombay (especially in the slums and villages of New Bombay), the data did not bear out the fact that I.V. drip salines too were as immensely popular as we had anticipated.

Practitioners from the New Bombay side in particular had several comments to make regarding the popularity of injections and drip salines. The comments of a few practitioners are registered below.

"Patients come and demand for a bottle (of saline). I have to convince them a lot that it is not necessary for them to take saline, but patients in this neighborhood are peculiar. They will take tablets and injections from me, but will go to another doctor and say *Doctor, batli chadao* (Doctor give me a bottle of saline). That doctor will oblige, he is only too happy to make a fast buck."

"At least 50% of my patients tell me "*doctor, glucose ka batli chadao*" (Doctor, please give me a bottle of glucose (saline). They believe that they will be cured much faster if they take one or two bottles of saline. If I tell them that saline is not required, they will not insist, but instead go to another doctor or a hospital and arrange to take the saline. Then they will come to me after a few days and proudly say - "See doctor, I went to that hospital and took 12 bottles of saline and now I am all right."

"People in this village are convinced that malaria can be completely cured only by saline. Besides, patients take pride in telling others that they have taken "x" number of bottles of saline from the doctor - a representation of their wealth."

One practitioner from New Bombay, who became popular with us because of his sense of humor and wit, used the game of cricket as an appropriate analogy to explain why practitioners have to cater to patient demands. During one of our visits to his clinic, we observed that he had given I.V. drip salines to several of his patients, three or four patients at a time, inside the clinic. We queried with him about the situation. In response, he said:

"During the past two hours, I have administered salines to 6 of my patients. Here, people are convinced that they will keep getting malaria again and again unless they have taken a bottle of saline. If I feel that a patient does not really need the saline, and decide not to give it, the patient will say *doctor tumko dimag nahi hai* (doctor, you don't have brains). So I give saline to my patients mainly to please them, and of course I get my money. If I don't please them, they will go to another doctor. You see, malaria in New Bombay is like a one day game (cricket). You have only one day to win the patient, or else you have lost the game (the patient). He will go to another doctor."

As observed earlier, most of the practitioners claimed that at least 50% of their malaria patients "demanded" that they should be given glucose drip saline, even when they (practitioners) believed or suggested that the saline was not necessary to bring the patient relief. Practitioners attributed the immense popularity of salines with their patients, especially in New Bombay, to what they believed glucose saline did to them - cool the body, bring quick and longer lasting relief. However, most of the patients whom we observed at the clinics did not volunteer for an I.V. drip saline, but nevertheless insisted on an injection. One patient was found saying: "If I get relief from an injection (which costs less), why should I ask for a saline bottle (which is so expensive)? On the other hand, we observed that few practitioners were persuading their patients to accept a bottle of saline. One practitioner was heard saying to his patient: "You are so weak. If I give you only medicines, you will not be able to digest them. This (saline) will make you feel better."²⁷

As noted earlier, 77% of the practitioners supplied I.V. drip saline bottles to their patients from their own stock. The remaining (23%) advised their patients to purchase the required number of saline bottles from a local pharmacy.

In New Bombay in particular, practitioners believed in addressing the "patients' psychology," and in the process were injecting a few additives into the saline bottle. Typically, these additives were parenteral B-complex, multivitamins, Avil (antiallergic), either as a single adjunct or often as a mixed adjunct - e.g. Avil and B-complex, along with chloroquine, occasionally quinine, or

²⁷ This particular practitioner from a village in New Bombay was immensely fond of giving injections. We noted that he gave an injection to every patient who came to him whatever be the nature of the illness. After asking his patient what he/she is suffering from, his next question would invariably be: "Shall I give you an injection?"

ranitidine, paracetamol. Few practitioners (mostly from South Bombay) said that they rarely gave I.V. drip saline to their patients, and even if they did give one to their patients, it was given only in an emergency situation.

Most practitioners supplied the I.V. set and drip saline bottles to the patient from their own stock and charged a flat rate that ranged between 80 and 100 Rs in New Bombay and 130 in Bombay on an average.²⁸ The cost of one bottle of drip saline to the patient often included the cost of additives such as an antimalarial (chloroquine, quinine), antiemetics, antiallergics, multivitamins, etc. Some practitioners charged a minimum rate of 100 Rs for the first bottle of saline, and 60-70 Rs for every additional bottle that was administered. In one case, a practitioner from South Bombay said that he rarely agreed to give I.V. drip saline to his patients since it was a time-consuming affair, demanding at least two hours of his attention, and in emergency situations if he did put his patient on drip saline, he charged 300 Rs per bottle. Some of the practitioners (23%) who did not keep a stock of drip saline bottles with them, often advised their patients to purchase the I.V. set and drip saline bottle from the local pharmacy, and charged the patient 30 or 40 Rs as service charge for administering the saline.

²⁸ It may be noted that in India, it is a common practice for pharmaceutical companies to sell drugs and intravenous fluids directly to GPs and private nursing homes, who in turn sell them to patients, often as a means of indirectly collecting consultation fees. Some GPs and private nursing homes in Bombay and New Bombay stock substantial amounts of I.V. fluids and medicines in rooms that often resemble a "mini-pharmacy." GPs and nursing homes get I.V. fluids at 7.50 Rs (or less) per bottle of 540 ml., but they charge 29-32 Rs. per bottle to their patients besides levying a 20% service charge. Irrked by this practice of pharmaceutical companies selling drugs directly to GPs (that cut down the profits of pharmacists), the Retailers, Druggists, and Chemists Association (RDCA) in Bombay recently brought up the issue before the FDA in Bombay, who in turn sent in a clarification that although such practice might have an unethical dimension, it was by no means illegal (see Times of India, Bombay, May 28, 1995)

Practitioners varied in their estimates about the percentage of their patients who are given injectable chloroquine, who return to them for follow-up treatment. Most of them (52%) said that only between 20 and 50% of such patients return for follow-up treatment. While few practitioners (6%) claimed that less than 10% of such patients return to them, as many as 19% of the practitioners claimed that 70 to 90% of such patients come to them again for follow-up treatment.

One of the practitioners from Mhape slum in New Bombay said:

"I can say that 50% of my patients come to me again regardless of what happens. There are some patients who will come to me again after two hours after I have given an injection to say that their fever has not gone. But about the remaining 50% of the patients, I cannot say anything. I cannot predict where they will go. They might come to me this morning, and if they don't get relief they will go to another doctor, who could even be my neighbor (doctor). This "doctor switching" is a big problem in this slum. You see, what happens is that, doctors cannot give weekly treatment. For example, if I have given quinine to a patient this morning and the patient does not get immediate relief, he will go to another doctor who will say...*late jao, do saline batli chadayaga...theek ho jayaga....*(lie down, I'll give you two saline bottles...you'll be alright). By then the quinine will have had its effect and the patient will attribute his "feeling better" to the saline bottles for which he will have paid 200 Rs or more. You see, there are these "duplicate doctors" (quacks) here (there are five doctors practicing in this slum). Their tendency is to be in this kind of places for six months and *jitna haat dho sakta hai utna dho lo* ("wash their hands as much as they can" i.e. an idiom -fleece the patients and make a fast buck and disappear to practice somewhere else). They somehow manage to *patao* (lure) their patients into accepting a drip saline bottle, and over time people in this area have come to believe that if they get malaria, they cannot be cured without taking a bottle of saline. You see, as far as doctor's popularity in this area is concerned, as the doctor becomes older (number of years of practice), his patients will also decrease. Patients get bored...same malaria...same doctor. Patients want a change. They want something new. A new doctor will have more patients. This is the history of this area. There was one Dr. "x" who was practicing in this area for 9 years. He was the first doctor to come to this slum. When a new doctor came in this area, he lost his practice. After him, so many doctors came who "got the market," but the story is the same. The latest one to come in this area has become very popular, maybe because he speaks Kannada (the language spoken by most of the construction/ quarry workers who reside in this area). He gets most of the Kannada speaking patients. I came to practice in this slum two years ago. In another two years from now, my situation will also be

the same. So "*Jab tak hai tab tak jindagi banao*" (make hay while the sun shines), wind up and start practice in some other place. This in brief is what malaria in New Bombay is all about."

Self-Medication With Anti-Malarials

All practitioners were interviewed on the issue of self-medication with antimalarials in the area where they practiced. While almost all practitioners asserted that self-medication was quite widespread in their locality, a few of them submitted that self-medication with antimalarials was not as widespread as it was with paracetamol and other over-the-counter popular medications. Practitioners from New Bombay in particular claimed that at least 50% of the fever patients who come to them will have already self-medicated with "Action -500" or "Lariago" - two of the most popular brands - the first, an antipyretic and the latter the most widely prescribed brand of chloroquine sulfate - a household name in New Bombay in particular.²⁹ A few practitioners from New Bombay claimed that people had now started self-medicating with quinine without knowing the correct dosage.

Doctor-Switching

As noted earlier, a common complaint of practitioners in the low income areas of Bombay and slums and villages in New Bombay, was the "doctor-switching" habits of the local people. We investigated the question - How long does a person suffering from "malaria" wait before looking for a different practitioner, different medicine? We asked all the practitioners to give us their estimates based on their experience with a variety of patients. We found that practitioners held

²⁹ Action 500 is a brand product of Proctor and Gamble India Ltd. With the following ingredients - Paracetamol 500 mg, Ephedrine HCL 12 mg, and Caffeine Anhy. 32 mg. Lariago is a brand product of IPCA Laboratories, with Chloroquine phosphate 250 equivalent to 155 mg of chloroquine base as its ingredient.

varying opinions about the estimated duration for which people in their locality wait before seeing a different practitioner or going in for a different medicine, i.e, if the patient believed that the "first" medicine was not effective. As many as 25% of the practitioners said that people in their locality did not even wait for the next day, and if they had seen a practitioner in the morning, and no relief was in sight, that same evening, they will resort to another practitioner. Another 23% estimated that the local people wait only for one day (24 hours) before seeing another practitioner or changing the medicines. The remaining 52% believed that people in their locality of practice wait for at least 2-3 days before changing the practitioner or the medicine if they believed that no relief was in sight.

The following excerpts from recorded interviews with a few practitioners in New Bombay shed light on the issue of how long according to practitioners patients wait before they decide to "switch doctors."

"There are two or three third rate "duplicate doctors" (quacks) in this area who do not give proper dosage. Therefore, recurrent malaria problem is more in this area. The government does not take any action. Malaria workers come here, take blood samples and give presumptive treatment (chloroquine) and come to report after one week. Meanwhile, the patient has taken treatment elsewhere and is cured. The malaria worker believes that it is "his" medicines that cured the patient, when in fact it is another doctor's treatment that has cured the patient. In this slum, *chillanewalla kahi nahi hai* (there is no one to raise a hue and cry) patients are not there. They are "wandering patients" they feel that if this doctor cannot cure today, there is always another doctor who will bring a cure."

"This is a slum area. No doctor in this area can claim that so and so is "his patient." Dr. G. has been practicing here for 12 years, and he could survive only because of the people's mentality - they change their doctor every day. They are not loyal to any doctor. If one doctor's treatment does not bring them relief, they will not wait even till the next day, but go to another doctor within hours after having visited the first doctor."

"Patients in this area have no patience. They want to feel better within minutes after they have been given the treatment. If they come to the clinic in the morning and by evening if they don't get relief, they will immediately change the doctor. Again if the patient does not get relief from the second doctor's treatment, he will go to another doctor - sometime patients here change 4-5 doctors during a single fever episode. By the time he has taken treatment from the third or the fourth doctor, the medicine given by the first doctor will have taken effect. If the patient feels better, the credit will go to the third or the fourth doctor, not the first doctor who has given the correct treatment."

"This place has a big floating population. No doctor in this area treats his patient as "my patient." Neither the patients have any loyalty toward any of the doctors in this area, nor can the doctors ensure the patronage of any of the patients who come to him."

Patient Directed Illness Labeling

During our preliminary exploratory visits to the practitioners' clinic, we observed a few patients volunteering to label their illness as "malaria" or "*thanditap*" even before the practitioner had asked them about the symptoms, and the history of the ailment. We presumed that, people who live in malaria endemic area, are likely to be "very familiar" with the typical symptom of malaria and would label any fever accompanied with chills as "malaria." To explore this aspect, we asked all the practitioners to give an estimate of the percentage of their daily patients who volunteer to tell them that they have "malaria" either by directly saying "Doctor I have malaria" or by presenting the practitioner with typical symptoms such as fever with chills/rigors, headache suggestive of malaria. Forty-four percent of the practitioners said that between 10 and 25 percent of their patients volunteer to tell them that they have malaria. Another 46% of the practitioners, between 40% and 90% of their patients either specify the illness label "malaria" or say "*thandi bukhar*" "*thandi tap*" or present typical symptoms of malaria, even before the practitioner has arrived at a diagnosis based on his or her own observations. According to the remaining 10% of

the practitioners claimed that 90% of their patients these days directly tell them "Doctor, I have got malaria, please give me medicines for malaria." Our observations in practitioners' clinics revealed that the phenomenon of patients volunteering to tell the doctor that they had "malaria" or its equivalent term in the local vernacular language, was more common in all the settings in New Bombay and only in the Chandivali quarry area in the Bombay side. In one instance, we were a witness to an serious altercation that ensued between a patient and a practitioner who had refused to write "malaria" medicines at the patient's behest.

Complicated Cases of Malaria

Given the significant increase in the number of reported cases of cerebral malaria and cases of death due to malaria in Bombay and New Bombay over the past few years, we asked all the practitioners whether they saw "complicated" malaria patients. Forty-two percent of the practitioners said that they did come across complicated cases - patients with indistinguishable symptoms, cerebral malaria, recalcitrant/repeated "relapse" recrudescence cases (due to the subcurative intake of antimalarials), mixed infection, malaria with "typhoid" malaria with jaundice, pregnant women with *falciparum* malaria, "drug resistant" patient, and patient who was unconscious or had gone into a coma state when brought to the clinic for treatment. Most of those who said that they encountered "complicated cases," said that they preferred to refer such cases to a consultant or a hospital. Others who said that they decide to handle such cases at their level, said that they give mefloquin, quinine, primiquine, recommend a blood test for accurate diagnosis and treatment, continue with the same treatment with a caveat to the patient that the entire course should be completed.

When asked how they handled "relapse" "recalcitrant" malaria patients - patients who kept coming repeatedly for treatment, most of the practitioners said that they advised a blood test to such patients so that the diagnosis and treatment can be followed more accurately. Others treated such patients with primaquine and/or quinine and advised strict treatment compliance.

Malaria Control - What Needs to Be Done

Practitioners were asked to give their suggestions on what needs to be done to control the malaria problem in their practice area. Most of them spoke of "mosquito control" without going into the specifics, and attributed the bulk of the responsibility on the municipality for maintaining cleanliness. Most of the practitioners, both in Bombay and New Bombay, were outrightly critical about the local municipality and its malaria control machinery. A few practitioners even added that they had never seen any of the malaria surveillance workers or anti-malarial activities of the municipal corporation, ever since they started their practice in the present locale.

In summary, this section reviewed the private practitioners' perspective on malaria in Bombay and New Bombay. Most of the practitioners in Bombay and New Bombay were agreed on the fact that malaria had become a significant health problem. Although most of the practitioners saw a link between mosquitoes and malaria, their descriptions of where malaria mosquitoes breed were inaccurate in entomological terms. As far as malaria diagnosis was concerned, most of the practitioners neither relied on the patient's malaria parasite blood report nor on diagnosis by treatment, but instead on the symptoms that the patient reported to them, and the clinical symptoms they noticed in the patient. Significantly, practitioners in Bombay and New Bombay

did not advise their patients to go for a blood test to check for the malaria parasites. A blood test was advised only in the rare event of a patient exhibiting symptoms that were not distinctively indicative of malaria, or patients who were recalcitrant or did not respond to the previous treatment. Almost all the practitioners prescribed a sub-optimal dose of the ideal treatment schedule to their patients. This was more pronounced in New Bombay, because practitioners were well aware that most of their patients could not afford to buy the full prescription. They also feared that if they wrote a prescription for expensive drugs, the patient will not comply with the recommended treatment, and instead go to another practitioner. The majority of the practitioners, both in Bombay and New Bombay had changed their first line of treatment and prescription pattern (dosage/schedule etc.) for malaria had changed "significantly" during the past 2-3 years.

Section III

Malaria Drug Sales Data³⁰

"We do *shree Ganeshayana maha* (take the name of Lord Ganesh and begin on an auspicious note) of this shop every day with a malaria customer, and again end the day's business by serving a malaria customer. Eighty percent of our customers are the malaria customers (patients). We are all fed up of giving the same medicines, for the same sickness, and to the same type of customers." (Pharmacy attendant in Nerul).

Pharmacies (chemist shops and drugstores) are not only sites where medicines are bought and sold, they are also places where information and advice on health problems and treatment are sought. Consistent with other parts of India, pharmacies in Bombay and New Bombay, operate under a variety of names such as "Chemists and Druggists," "Chemist and General Store,"

³⁰ As noted earlier, data on what happens at pharmacy counters with respect to sale of anti-malarials were gathered only to provide a preliminary insight - as exploratory data.

"Medical and General Stores," or simply "Medicals."³¹ Data pertaining to the role played by pharmacies in malaria control in Bombay and New Bombay were collected at the site of eight pharmacies.³² Two data sets are discussed in this section - drug sales data and exit-interviews with a sample of 40 pharmacy customers. In all, 159 customers who had purchased at least one antimalarial were followed. The drug sales monitoring exercise resulted in documenting pertinent data on 309 medicines purchased by the 159 customers.

Drug Sales Pattern

The pattern of malaria associated drug sales monitored in the pharmacies in Bombay was significantly different from the sales pattern observed in New Bombay. The volume of antimalarials sales in New Bombay was manifold as compared to Bombay. The drug sales data reflected the dominant trends in the two cities in terms of levels of "endemicity." The number of days and hours spent at the pharmacies was identical for Bombay and New Bombay.³³ Yet, the data revealed that out of the total items monitored at the 8 pharmacies, only 31% were recorded in the Bombay pharmacies, and 69% were recorded in the New Bombay pharmacies. The number of antimalarials and adjunct drugs purchased during the 2-3 hours observation period ranged from

³¹There are few "pharmacies" in India where a qualified pharmacist "fills prescription" or "dispenses" medicines in the manner found in most pharmacies in the West. In Indian pharmacies, only prepackaged medicines are sold, be they allopathic, ayurvedic, unani, or homeopathic medicines. Contrary to practices in the West where the pharmacist retains the doctor's prescription, the common practice in India is to return the prescription to customers after medicines have been purchased. Shop attendants request prescriptions from their customers more as a means to help them locate the right medicines than as a means to control the sale of scheduled drugs.

³² Specifically, malaria associated drug sales were recorded in eight pharmacies - one in each of the eight research sites, for two days in each shop, one day in the morning and one day in the evening to record the range of antimalarials and adjunct drugs purchased by customers and patients. Data collection was done in November, December 1995 and January 1996.

³³ Two day were spent in each of the eight pharmacies, and drug sales pertaining to anti-malarials were monitored for three hours in the morning and three hours in the evening. In addition, exit-interviews were conducted with a sample of customers during the observation period.

as low as only one antimalaria purchased during the entire observation period, to as high as 80 antimalarials and adjunct drugs. The number of customers purchasing antimalarials during the observation period ranged from a single customer to as many as 46 customers. Customers who purchased at least one antimalaria often purchased other adjunct drugs such as an antacid and antiulcers, and/or antiemetic and antinauseants.

Self Versus Proxy Purchase of Medicines

Of the 309 drugs purchased by 159 customers, 48% were purchased by the customer for "self use" (the customer was the patient), and an equal number of drugs (49%) were purchased by the customer in proxy, i.e., for a family member or a relative who was a malaria patient. Three percent of the drugs were purchased by the customers for self use and for a family member, apparently for prophylactic use.

Drugs Purchased With and Without Prescription

Significantly, 94% of the drugs were purchased with a prescription,³⁴ and 4% by mentioning the brand name of the drug, and the remaining 2% by presenting symptoms to the pharmacy attendant, or by showing an old sample of the drug or a chit on which the name of the drug was written. In one case the customer simply described the size and color of the packet containing the drug. Most of the prescriptions were written by the practitioner the same day on which the

³⁴ These data which reveal that a high percentage of customers bought antimalarials and adjunct drugs against prescription counters the impression conveyed to us by some practitioners about OTC purchase of antimalarials and self-medication. Alternatively, we suspect that since the data were monitored during the morning and evening hours, which are peak hours for the local practitioners, most of the purchases were made by customers and patients who had arrived at the pharmacy, immediately after receiving the practitioner's prescription. Others who purchased their medicines over-the-counter probably came at the time of day when we were not monitoring the drug sales.

customer purchased the medicines. Only in 3% of cases, the prescription was one or two days old.

Not all practitioners had specified the dosage and schedule/duration of the therapy, on the prescription. Such cases accounted for 9% of the drugs. These included 5 drugs which were purchased for prophylaxis. Excluding 16% of the drugs with unspecified duration, or which were purchased over-the-counter (N=261) as many as 24% of the drugs were prescribed for two days or less and 36% for three days, and 37% for four days and more. The remaining 3% of the drugs had been prescribed for two weeks.

Significantly, as many as 43% of the drugs (tablets and capsules) were purchased in sub-optimal doses - in loose. For example, a strip of chloroquine sulfate that contains ten tablets is normally priced at 9.75 paise but customers purchased between two tablets to eight tablets of chloroquine, and most of the pharmacy attendant did not hesitate to oblige such customers. Partial purchases of medicines was more pronounced if the practitioner had prescribed quinine tablets which are very expensive as compared to chloroquine, with each tablet costing between 4.50 rupees and 5.50 rupees - depending on the brand.

How Much Money People Spend on Antimalarials and Adjunct Drugs

In terms of how much customers spend on an average on antimalarials and adjunct drugs during a single transaction at a pharmacy, while the lowest priced drug was Rs 1.50 paise, the most expensive drug cost the customer rupees 51.50 paise. One customer had to spend only 1.50 paise,

and another customer had to spend as much as 95.00 Rs during a single transaction - 20 tablets of Quinine Sulfate. Most of the customers had to spend on an average 16 Rs per transaction. The data revealed that 45% of the drugs cost the customer 10.00 Rs or less, and 50% between 11 Rs 51 Rs, and the remaining 5% of the customers had to spend between 52 Rs and 95 Rs for each drug item. The following were the different brands of antimalarial and adjunct drugs that practitioners in Bombay and New Bombay prescribed to their "malaria" patients:

Chloroquine products: Lariago, Clo-Kit (Indoco Remedy product), Nevaquin, Resochin, Reziz and Reziz-Forte, Amalar, Malaquin, Emquin.

Quinine products: P.Falci, Rez-Q - 300/600 mg, Quinidol, Quininar, Quinine, Quininga, Quininta, Quinnros, Quinrol, Quintor, Qunarsol, Qunitar.

Sulfadoxine and Pyrimethamine: Pyralfin, Malasulf

Mefloquine : Larium (mefloquine) - rarely prescribed because of its cost and its nonavailability in the open market.

Primaquine : Primaquine

Antacid, Antiulcer, Antiemetic and Antinauseant: Aciloc, Domestol, Nauseadom, Normodil, Ranitidine, Ranitol, Avomin, Digene, Gelusil, Blockacid, Omaz, Mucaine Gel, Zintec, Stemetil.

Antibiotics: Amoxycilin, Ampicilin, Tetracycline, Norflox, Cirpofloxacin, Cifran, Ciplox, Novamox.

B-complex and Mvitamins Becausules, Electral, Glucon-D, Relyte.

Antipyretics and pain killers - Brufen - 600, Calpol, Crocin, Ibuflamer, Metacin, Metakalfin.

Proportion of Antimalarials versus Nonmalarials

Fifty-seven percent of the drugs purchased were antimalarials, while the remaining 43% were adjunct medicines. Twenty-eight percent of the drugs were different brands of chloroquine and 25% were quinine products. Four percent contained primaquine or pyrimethamine and sulfadoxine. Antiemetics and antinauseants comprised 18% of the drugs, and 11% were antacids and antiulcer drugs. Five percent were antibiotics, and the remaining 9% comprised antipyretics, anti-inflammatory drug, vitamins, B-Complex and glucose products.

Alongside the drug sales monitoring in the eight pharmacies, we conducted brief exit interviews with five customers randomly identified in each of the eight pharmacies. Outlined below are the data obtained from the exit-interviews.

Exit-Interviews With Customers Purchasing Antimalarials

Customer Profile

Forty customers were briefly interviewed after they had purchased at least one antimalarial. Customers were randomly chosen for an interview. Of the 40 customers, 63% were males and the remaining 37% were females. The mean age of the customers who were selected for the exit interviews was 32 years. The youngest customer interviewed was 19 years of age, and the oldest was 65 years of age. Forty-three percent were in the 19-30 age group, and the remaining 57% were in the 32-65 age group. Fifty-seven percent of the exit-interview respondents were from the lower social class, and 8% were from the lower middle social class, and 25% were from the middle class and 10% were from the higher income and social class. Sixty-eight percent of the

respondents had an education level of 10th standard or less, and the remaining 32% had received college education. Thirty percent of the respondents were homemakers, and the remaining were engaged as construction workers, quarry workers, laborers, petty clerk, a bus driver, and professionals including a business, petty trade, a beer bar attendant, a garage worker, and domestic servants.

Medicine Purchasing Behavior at Pharmacy Counters

Seventy-eight percent of the respondents said that they patronized the pharmacy and preferred to purchase their medicines at the pharmacy where they were interviewed for various reasons. The remaining 22% did not patronize the pharmacy. The most commonly purchased antimalarial was Lariago, followed by Clo-kit, Resochin, Reziz and Reziz- Forte and quinine brands such as Qunidol, Quinrol, Quninars, Quninga, Quninors, Quninrso. As many as 43% of the respondents had purchased at least one partial dose of antimalarial. Importantly, barring 4-5 cases where the customer had decided to purchase fewer number of tablets/capsules - usually half the number of the prescribed tablets/capsules, either because the customer did not have sufficient money to purchase the entire prescription, and/or to test the efficacy of the drug and to wait and see, all the others who purchased a sub-optimal dose of antimalarials, had done so because the practitioner's prescription itself contained a partial dosage. Eighty-three percent of the customers had purchased their medicines against prescription. Others had purchased their medicines over-the-counter, - mostly by mentioning the brand name of the drug. Except two customers, all the customers had come with prescription written by the practitioner the same day. Most of the recommended treatment (63%) contained drugs prescribed for three days or less. Fifty percent of the customers

had purchased the medicines for self use, and the remaining 46% had done so in proxy for a family member - son, daughter, granddaughter, brother, husband, wife, grandmother, of a relative. Only one respondent had purchased the drug for self-use and in proxy for a co-worker at a construction site.

Antimalarials and Nonmalarials

Five customers had purchased more than one antimalarial chloroquine with primaquine, quinine with primaquine. Forty-two percent of the customers had purchased only an antimalaria and no adjunct drug. The remaining 58% customers had purchased at least one drug besides an antimalarial - 37% at least two drugs, 18% at least three drugs, and one customer had purchased four drugs at the point of the interview. Most of the respondents who had purchased more than one drug, had purchased an antiemetic and antinauseant - Domperidon, Domestal, Stemetil, Normatic, or a antacid Ranitidine, Rantac, Mucaine Gel. A small number had purchased an antibiotic - Ampicilin, Cirpofloxacin - mostly in partial dosage. Of the 40 respondents, while 88% had purchased only one antimalarial, and 12% had purchased two antimalarials. Fifty percent of the respondents had not purchased a nonmalarial (excluding an antibiotic), and 38% of the respondents had purchased at least one nonmalarial (excluding an antibiotic), and the remaining 12% had purchased two or more nonmalarials along with the malarial. Four customers had purchased at least one antibiotic along with the antimalarial and adjunct nonmalarials. Of the 40 exit-interview respondents, six had purchased all the drugs over-the-counter - without prescription.

Twenty-five percent had spent a total of less than Rs 9.75 paise another 25% had spent between 11.00 Rs and 27.80 paise, 33% had spent between 29.00 Rs and 50.75 paise, and the remaining 17% had spent between 52.00 Rs and 110.00 Rs during the transaction after which they were interviewed. Of the 40 customers, two had come to purchase antimalarials to self-medicate, and another two had come to purchase them for prophylaxis. Only two customers had purchased half the dose prescribed by the practitioner. A customer who had purchased an antimalarial over-the-counter, explained his actions in the following words:

"Actually, now I am not experiencing any of the typical malaria symptoms, but I seem to get a feeling that I am going to get fever and shivering. In case I start getting severe bodyache, and my nose starts watering, and I get a severe headache, then I will conclude that it is malaria. I have had this malaria at least 7-8 times, so much so that I have myself become a malaria doctor!" (Customer at pharmacy in Colaba).

Another customer interviewed at the same pharmacy had this to say regarding self-medication and purchasing antimalarials OTC:

"What is the point in going to the doctor? Anyway he is going to write this tablet. Why go to a doctor and waste 50 Rs when the same work can be done in 10 Rs by buying these tablets from the chemist shop?"

When asked what they had thought the illness (label) was before going to the practitioner, or before coming to the pharmacy to purchase an antimalarial, 43% said they were sure it was "malaria", and 28% said that they believed it was "*thandi tap*" or "*thandi bukhar*", and 12% said that they could not label the illness, and the remaining 17% believed that it was either ordinary fever or a fever that was likely to become malaria. Most of the customers said that the patient (including self) had been ill since two days, and occasionally the fever was first noticed two weeks ago, or that intermittent fever had been going on and off over the past six months.

When we asked a customer at a pharmacy in Belapur village, New Bombay, since how long he had been sick, he became perturbed by the question and said:

"Please don't ask me how long I have had this malaria! I have had it ever since I came to this New Bombay 6 months ago. Every time I fall sick, the doctor gives me the same medicine. What else can he do? If I am terribly weak, then he gives me a bottle (of saline). But the tablets he gives are not very effective. I say, these days even the medicines are fake. Those companies (pharmaceutical companies) don't make these medicines properly. They adulterate it with something and we have to pay the price for their sins by falling sick repeatedly and spending so much money. The doctor had told me to take two of these tablets - one every week, but I take them twice a week (two tablets twice a week), because I am so terrified by this malaria. It's a terrible illness. Once it comes, it doesn't leave you alone. It keeps coming repeatedly. *Sara kamaie ise me phukaya ja raha hai* (I have been burning away all my money on malaria). I had dreamed that I will come to New Bombay (from my village), find some employment, work hard and earn some money so that I could remit some money to my family in the village. But look at what has happened! I am all right for one week, and the following week I am "booked" by this malaria fever. Well, no one can stop it from coming, but once it comes, I have to blow 150-200 rupees on it." (Customer at pharmacy in Belapur).

Majority of the respondents (58%) had seen the practitioner on the day they were interviewed.

Others had gone to the practitioner the previous day or in some cases over a week earlier.

Lay Diagnosis versus Practitioners' Diagnosis

Excluding six respondents who had not seen a practitioner before purchasing the drugs, 82% said that the practitioner had labeled the illness as malaria and in a small number of cases, the type of malaria - *falciparum* or *vivax* was also specified. Twelve percent said that their practitioner had diagnosed the illness as suspected malaria, and the remaining 6% of the respondents said that the practitioner had not told them what the illness was, and that they would be going back to the practitioner to show the medicines, an opportunity for the practitioner or his assistant to inform them about the illness.

A female customer(30 years of age) interviewed at a pharmacy in Turbhe Ward, New Bombay, gave a graphic account of how the labeling of her symptoms as "malaria" had taken place.

"Yesterday evening I had fever with vigorous shivering. I covered myself with four *godadis* (rugs) and slept on the bed. But the shivering did not stop. The bed was shaking so much. So I got up and slept on the floor with all the rugs on me, but the shivering did not stop. I was shivering vigorously for over half an hour. Then my neighbor came and when she saw me shivering like that, she immediately said "*Tumala malaria ne pakadlai*" (Malaria has caught you). Please go to a doctor." After a while the shivering stopped and I developed severe body pain. My entire body was paining badly. My husband was not at home, so my neighbor had sent for the doctor. The doctor came and said "You have got malaria." He gave me an injection and some tablets, and prescription. That whole night my neighbor was by my side - she did not sleep a wink. I delayed coming to this shop to buy medicines because I wanted to first see whether the doctor's medicine was effective. I thought - why waste money on buying more medicines when the doctor's medicines might be effective. But now that I have again started feeling feverish, I decided to buy these prescribed medicines"

Excluding the respondents who had purchased their medicines over-the-counter, most of the respondents (67%) had been advised by their respective practitioners to take the recommended medicines for at least three days or more. Another 18% had received a prescription for two days, and 9% for 15 days or more. The remaining 6% of the customers were unsure about the duration for which the practitioner had prescribed the drug.

Of the 40 respondents, 32% had purchased the full prescription, and the remaining 20% had purchased either part of the prescription or had purchased the drugs as prophylaxis. Partial prescription was purchased because of economic reasons and/or to test the efficacy of the prescribed drugs. One customer who was interviewed at a pharmacy in South Bombay said:

"My husband has fever with shivering. That is all, nothing else. Whenever he gets this fever with shivering, he tells me to cover him with all the *chaddar* (warm clothes) in the house, and then tells me to sit on him while he is shivering. The

doctor has written 20 tablets (primaquine), but my husband wants to try out with 10 tablets. If it works, then its fine, if not why buy all the 20 tablets when you are not even sure that they will be effective? Why waste money?"

Dosage and Schedule

When asked whether they knew the dosage and schedule of the drugs they had just purchased, 68% said that they certain about the dosage and schedule details, while the other 32% said that they did not know the details, either because their practitioner had advised them to purchase the drugs first, and then return to the clinic to be informed about the dosage and schedule, or because they were only purchasing the medicines on behalf of a family member of a relative - the patient who knew of the dosage and schedule details. Describing the confusion regarding schedule and dosage that arises because of several episodes of malaria treated with multiple therapies, a female customer said:

"I have had this terrible disease (malaria) so often, and I have eaten so many tablets for this illness, that now I cannot distinguish the taste of one tablet from the other - they all taste the same." (Customer at pharmacy in Nerul)

An example of patient's dependence on the practitioner to know the correct schedule and dosage is illustrated in the following conversation that took place between the PI and a customer who had purchased a packet of "Clo-Kit" (chloroquine) at pharmacy in Lower Parel (F/S Ward).

Researcher:

"Do you know how to take these tablets (schedule and dosage)?"

Customer:

"No, the doctor has asked me to come and see him now so that he can tell me how to take these tablets."

Researcher:

"But it is written so clearly on this tablet about which tablet to take when, so why do you need to go to the doctor again."

Customer:

"Sir, I have to go to the doctor to show these tablets. He will tell me how to take these tablets, how many to take, and till when to continue taking. Besides, he will also tell me what foods to avoid and all that. If I knew how to take these tablets (schedule, dosage etc.) on my own, then why would I even gone to a doctor in the first place? I don't want to taken any medicines on my own (self-medicate). Dr. P gets very angry. He shouts at us (patients) if we tell him that we have taken some outside medicine (over-the-counter). He has told me that if I ever eat medicines on my own, I should never come to him ever again."

Side-Effects

Excluding the 23 respondents who had purchased the drugs for the first time, 76% of the respondents were aware of the side-effects, mostly based on previous experience, and the remaining 24% had not experienced any "side-effect". Vomiting, mouth ulcers, acidity, loose motions, dizziness, were some typical side-effect they/the patient had experienced in the past after consuming the same medicines they had just purchased. Typical remedies to counter the side-effects were -avoid oily, spicy food, give glucose water or lemonade to the patient.

To sum up this section, a little more than half of the customers monitored at 8 pharmacies in Bombay and New Bombay purchased antimalarials and adjunct drugs for someone other than themselves in proxy for a family member or a relative who was a malaria patient, and significantly, 94% of the drugs were purchased with a prescription, and nearly half of the antimalarials and adjunct drugs were purchased in sub-optimal doses - in loose. Data from the exit-interviews also corroborated this trend. Of the total sale of antimalarials and adjunct drugs monitored, while a little more than half were antimalarials, the remaining were all adjunct medicine. Prescription for

chloroquine and quinine was almost in equal proportion. In other words, the data clearly showed that the shift from using quinine instead of chloroquine as the first line of treatment is a reality that should be a cause for concern. Antiemetics, antinauseants, antacids and antiulcer drugs comprised a significant number of the adjunct drugs.

In summary, this chapter examined the role of private practitioners and private pharmacies in malaria treatment, control and prevention in Bombay and New Bombay. The data examined in this chapter clearly showed that private practitioners in Bombay and New Bombay played an immensely important role in urban malaria control given the volume of malaria patients they daily treated, and the mechanisms they adopted to diagnose and treat their patients' illness. In Bombay and New Bombay several practitioners who were trained in non-western systems of medicine (ayurvedic, homeopathic and unani) freely used western medicine to treat their malaria patients. Most of them practiced in an ambiance that was stuffy, dingy and congested, and attended to between 30 and 150 patients daily. Patients rarely asked questions to their doctors regarding the identity of their ailment, and in turn practitioners rarely volunteered information or gave detailed advice to their patients. Much of the doctor-patient interaction which lasted for 5 minutes or less centered on medicine taking - schedule and dosage of the medicines. A common practice among practitioners of Bombay and New Bombay was to write prescription and ask the patient to return with the purchased medicine to the clinic so that the practitioner or the assistant could explain the schedule and dosage details to the patient. Very few practitioners relied on a peripheral blood smear to arrive at a diagnosis.

Most of the practitioners in Bombay and New Bombay were agreed on the fact that malaria had become a significant health problem. Although most of the practitioners saw a link between mosquitoes and malaria, their descriptions of where malaria mosquitoes breed were inaccurate in entomological terms. As far as malaria diagnosis was concerned, most of the practitioners neither relied on the patient's malaria parasite blood report nor on diagnosis by treatment, but instead on the symptoms that the patient reported to them, and the clinical symptoms they noticed in the patient. Significantly, practitioners in Bombay and New Bombay did not advise their patients to go for a blood test to check for the malaria parasites. A blood test was advised only in the rare event of a patient exhibiting symptoms that were not distinctively indicative of malaria, or patients who were recalcitrant or did not respond to the previous treatment. Almost all the practitioners prescribed a sub-optimal dose of the ideal treatment schedule to their patients. This was more pronounced in New Bombay, because practitioners were well aware that most of their patients could not afford to buy the full prescription. They also feared that if they wrote a prescription for expensive drugs, the patient will not comply with the recommended treatment, and instead go to another practitioner. The majority of the practitioners, both in Bombay and New Bombay had changed their first line of treatment and prescription pattern (dosage/schedule etc.) for malaria had changed "significantly" during the past 2-3 years. As for the role of the pharmacies in malaria control, the data revealed that over-the-counter purchase of anti-malarials was not as common as made out to be in Bombay and New Bombay. A large majority of the people purchased their anti-malarials against a prescription. However, nearly half of the antimalarials and adjunct drugs were purchased in sub-optimal doses - in loose. Data from the exit-interviews also corroborated this trend. The data clearly showed that the shift from using quinine instead of chloroquine as the first

line of treatment was a reality that warranted concern. Antiemetics, antinauseants, antacids and antiulcer drugs comprised a significant number of the adjunct drugs.

CHAPTER VI

SUMMARY OF FINDINGS AND CONCLUSION

"The presence of urban malaria is an administrative crime" (Farid 1980; p9).

In 1990-in this age of rocket ships and genetic engineering-250 million people will get malaria and at least 2.5 million will die of the infection -needless deaths. Malaria is not an AIDS; the curative antimalarial drugs are available. Malaria is not like cancer; the most intimate details of malaria's causation are known. Malaria is not like the epidemic of drug addiction; given the resources, successful antimalarial campaigns can be implemented (Desowitz 1991; p123).

This chapter summarizes the main findings of the study, and discusses their ramifications for malaria control in two neighboring cities - Bombay and New Bombay, and other comparable urban settings in India that are currently marked by resurgent and endemic malaria. To recapitulate, this study was conducted in Bombay and New Bombay at a time when malaria had become an enormous problem in both the cities. For several decades Bombay had stood up as an exemplar for how urban malaria could be successfully kept under control even in the face of very high population densities and a rapidly changing landscape. Recently, however, the scenario had changed, and malaria had reemerged as a major health problem in the city for whatever reasons. In New Bombay too, malaria had emerged as an immense problem at a time when the municipality was nascent and the health infrastructure abysmally poor. Entomological and epidemiological facts about the recent resurgence of malaria in Bombay and New Bombay were known, but ethnographic details about how urban neighborhoods interpret the illness in the cultural context were lacking. In need of being examined was how people who lived in different socio-spatial configurations interpreted and responded to malaria at a time when the environment and socio-economic realities were rapidly changing in both the cities. The specific task set out before the

study was to make a comparative cultural analysis of the malaria situation in the two geographical domains and to draw out inferences that would have implications for urban malaria control programs in general.

An appreciation of how urban dwellers interpret typical symptoms of malaria, and the cultural meanings they attribute to therapeutics and outcome, are imperative for the success of any urban malaria control program. In this context, the present study was carried out precisely to document how people who live in urban and peri-urban areas respond to malaria or suspected malaria at the individual, household and the neighborhood level. The study was conducted with the following objectives: To (a) document whether and how people who live in urban areas perceive and differentiate malaria from other forms of illness that are complicated by 'fever', (b) identify local health concerns regarding vulnerability of certain segments of the population to malaria, and to make interlocale comparisons of the responses, (c) ascertain the measures people take to prevent malaria at the household level, and to compare the perceived efficacy of individual, household and community-based/local municipal health authorities initiated anti-malaria control measures, (d) ascertain the attitude of local people toward government health functionaries engaged in anti-malaria activities, (e) document malaria related illness stories of people to highlight the suffering and disruption in everyday life furthered by the illness (f) observe and document interactions between malaria patients and private medical practitioners to feature how private practitioners diagnose, advice and give treatment to such patients, (g) ascertain the health expenditures incurred in the treatment of malaria, and to document the manner in which family members mobilize resources, reallocate household resources to deal with an episode of malaria in the

family, and (h) explore the scope of community participation at various levels in anti-malaria programs.

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The study was conducted in eight malaria endemic municipal administrative wards - four in Bombay and four in New Bombay with a comparative perspective. Households, private medical practitioners and private pharmacies constituted three interrelated units of analysis. Four hundred ethnographic interviews - 200 in Bombay and 200 in New Bombay - were conducted with heads of households/prime caretakers belonging to families that had experienced an episode of malaria or had been treated for suspected malaria. Participant observation in homes, interviews with 48 private medical practitioners, and participant observation in eight private pharmacies was combined with exit-interviews with 40 customers purchasing anti-malarials. The data thus obtained were subjected to standard quantitative and qualitative analysis.

Major Findings

1. Most of the people in Bombay and New Bombay believed that "malaria" or its vernacular equivalent *thandi-tap* (Marathi) or *thandi-bukhar* (Hindi) was a common illness in their neighborhood, and that its intensity had significantly increased over the years.
2. People in both the cities were remarkably familiar with the typical symptoms of malaria and could make a distinction on the basis of symptoms, between malaria and other illnesses complicated by fever. Fever filled with bouts of shivering, several frontal headache, body ache, and vomiting sensation were used as empirical referents for malaria. For some people, particularly in the slums and villages of New Bombay, the symptoms typically associated with malaria

represented only the initial stage of a disease, which if wrongly treated or neglected graduated into "typhoid" or "pneumonia." They explained this gradation of symptoms into a "higher illness" as indicative of a serious illness that frightened them.

3. Explanatory models of the people of Bombay and New Bombay about malaria incorporated mosquito as a causative agent, but mosquitoes were seen as manifestation of wider environmental deterioration - air and water pollution, accumulation of garbage and blocked drains - sites that attracted mosquitoes. Nevertheless, people did not make a distinction between the day-time biting culex mosquitoes from night-time biting anopheles mosquitoes.

4. People commonly blamed other social groups for bringing malaria into their neighborhood. In Bombay, the wealthy people blamed the slum dwellers and "unhygienic" servants, and the natives of villages in New Bombay blamed the migrants and CIDCO's inefficiency as the cause for the upsurge of malaria in their neighborhood.

5. The majority of the people in both the cities believed that malaria was "transmittable," but not "contagious." In New Bombay in particular, people believed that malaria was also transmitted from one person to another by means of a healthy person inhaling the *vaas* (smell/body odor/breath) of an infected person, and transference of the infected person's *uob* (body warmth) into a healthy person, who eventually contracted malaria. This transference may be occasioned by "sleeping with the infected person," by way of vomit (inhaling the noxious odor), and sharing clothes/towels, plates, drinking glasses with the malarious person. Only one-fourth of the respondents were emphatic about malaria being caused and transmitted only by the bite of an unspecified infected mosquito.

6. Significantly, nearly two-thirds of the respondents could not specify the different types of malarias. Very few mentioned *falciparum* malaria and *vivax* malaria without going into the details. Others identified types of malaria based on tangible symptoms and adjunct illnesses, such as the malaria that comes with a *gaat* (knot - enlarged spleen), malaria that goes into the head (*falciparum*/cerebral malaria), a type of malaria that is either accompanied or followed by jaundice (hepatitis) or typhoid.
7. In one-third of the households, this was the first time that a family member had contracted malaria. In the remaining majority of the families, at least one member had experienced malaria, before the present index case. The proportion of households with at least one previous experience with malaria was significantly higher in New Bombay (78%) as compared to Bombay (52%) - an indication of the variance in the intensity of malaria between the two cities. Moreover, households in slums, villages and nodes had experienced malaria earlier at least once as compared to households living in apartment blocks/building complexes. Similarly, the proportion of households with previous experience with malaria was significantly higher in Chandivali (in Bombay), and all the four wards from New Bombay as compared to the A, D, and F/S wards in Bombay.
8. There was no consensus over the seasonality of malaria. Although many respondents associated the onset and peak time of malaria to the commencement and tapering of the monsoons, leading to mosquito breeding, many respondents were categorical about malaria being a perennial problem in their neighborhood.
9. Regardless of their socioeconomic status, most of the people in both the cities believed that no one was particularly vulnerable to getting malaria. In terms of “degrees of vulnerability,”

however, they believed that those who were constitutionally and nutritionally weak were more vulnerable, but this "weakness" has little to do with the age or sex of individuals.

10. The illness stories told by the people of Bombay and New Bombay encoded the reality that households often experienced multiple episodes of malaria simultaneously. The meanings that people attached to the illness revealed that malaria meant far more than a disease to them. It epitomized suffering, mental agony (*mansik tras/tanav*), economic hardships, disruption in the everyday life, and often impending death.

11. Foremost among the consequences of a malaria episode in the household, as reported by the respondents was a good deal of *mansik tras/tanav* (mental tension and worries), followed by everyday management of household chores being in disarray, and missing work and school. Financial consequences were of primary concern to most of the people because a substantial portion of the household savings had to be diverted toward purchasing medicines, paying the doctors' fees and hospital charges. Commonly, people were compelled to borrow money either from relatives, neighbors or moneylenders.

12. Past experience with repeated attacks of malaria had heightened people's symptom recognition and symptom sensitivity, but this had not significantly influenced their promptness in seeking treatment. Decisions in this regard were largely governed by economic considerations and issues of accessibility. Indeed, repeated attacks had made illness management difficult and complicated.

13. One-third of the households had not incurred any expenditure on treatment of the most recent episode of malaria. For the others, bringing cure meant having to spend between as little as 2 Rs to as high as 10,000 Rs.

14. Two-fifth of the respondents claimed that they were not afraid of contracting malaria again. Those who were afraid of getting malaria over and again, were frightened not only because of the possibility that it could “go into the head” (cerebral malaria) and bring death, but also because it brought financial hardships and disrupted family life.
15. Self-medication was the first resort in nearly three-fifth of the reported malaria cases, and in 90% of the cases, the first source of treatment outside the home was a doctor - a private practitioner or a government/municipal doctor. Nearly two-thirds of the patients were taken to a private practitioner or a private nursing home/hospital, thus making the private practitioner the most popular source of help outside home during a fever/malaria episode. Dissatisfaction with the public health system, poor accessibility was a common reason for the people of Bombay and New Bombay to resort to private practitioners. At the same time, people were also critical of practitioners, especially in New Bombay where they were often characterized as being unsympathetic, greedy and interested only in making money out of their patients’ misfortunes.
16. Anti-malaria therapy in both the cities (particularly in the slums and villages of New Bombay) constituted expensive modes that regularly included injections and I.V. drip salines.
17. The majority of the people in Bombay and New Bombay relied on ceiling fans and technical fixes such as "GoodKnight" as mosquitoes and malaria prevention measures. Whether they were consciously using these measures to prevent malaria, or primarily to ward off mosquitoes because of their nuisance value, was unclear. Bednets were among the least popular measures used by the people of Bombay and New Bombay. Bed nets did not appeal to most people in Bombay and New Bombay because (a) high levels of humidity made sleeping under a bed net uncomfortable (b) bed nets were impractical to use because the small size of their dwellings, and (c) with several

members in the household, many bed nets would have to be purchased. The extensive use of technical fixes represented a trend where people preferred to manage malaria as an individual and household level problem rather than a community level concern.

18. Notably, three-fifth of the households did not incur any expenses on preventive measures, either because they were not taking any measures, or that the measures they took did not require any expenses. Since most of the households used more than one preventive measure, the mean monthly expenditure per household on preventive measures was 45 Rs.

19. Most of the people in the neighborhoods where the research was carried out held that there was poor scope for community participation because people had become increasingly *swarthy* (self-centered), and they were preoccupied with their everyday hardships and simply did not have time for community health activities. While the rhetoric of community participation assumes considerable importance in malaria prevention and control activities, the study revealed that its scope was highly limited by certain sociocultural factors in the neighborhoods that were covered by the study.

20. The study revealed that there prevailed a deep sense of uncertainty regarding the malaria situation in the coming years among in the minds of the people of both the cities. Several people believed that it was unlikely that the malaria situation would improve in the coming years, and many indeed feared that the worst was yet to come.

21. The study documented the fact that private practitioners and private pharmacies played an immensely important role in the prevention, control and treatment of malaria in Bombay and New Bombay. Especially in New Bombay, interaction between malaria patients and the private health sector was far more intense that it was with the public health sector.

22. In New Bombay in particular several practitioners who were trained in non-western systems of medicine freely used allopathic drugs. Almost all of them treated their patients with sub-therapeutic doses of anti-malarials and antibiotics. This mode of treatment was more pronounced in New Bombay, because practitioners feared that if they wrote a prescription for expensive drugs, the patient will not comply with the recommended treatment, and instead go to another practitioner.

23. Doctor-patient interactions involved very little verbal interaction. Patients rarely asked questions to their doctors regarding the identity of their ailment, and in turn practitioners rarely volunteered information or gave advice to their patients regarding malaria prevention. Most practitioners spent five minutes or less with each patient. The "quality" of advice that practitioners gave their patients was highly variable. Most of the practitioners cursorily explain the drug schedule and dosage to their patient, and left the detailing job to their assistant(s). The content of the advice pertained mostly to medicine consumption and diet and rarely about preventive measures.

24. Most of the practitioners saw a link between mosquitoes and malaria, but their descriptions of where malaria mosquitoes breed were inaccurate in entomological terms.

25. As far as malaria diagnosis was concerned, practitioners in both the cities neither relied on the patient's malaria parasite blood report nor on diagnosis by treatment, but instead on the symptoms that the patient reported to them, and the clinical symptoms they noticed in the patient. A blood test was indicated only in the rare event of a patient exhibiting symptoms that were not distinctly indicative of malaria, or a patient was not responding to treatment.

26. The majority of the practitioners, both in Bombay and New Bombay had changed their first line of treatment and prescription patterns (dosage/schedule etc.) for malaria had changed during the past 2-3 years. Most of the practitioners from Bombay continued to rely on chloroquine as the first line of treatment, but had recently started prescribing quinine sulfate, primaquine and occasionally mefloquine. Practitioners from New Bombay, besides prescribing newer brands of the same drug (chloroquine, quinine and primaquine) had started prescribing quinine sulfate either as a first line of treatment or as a follow-up treatment if chloroquine therapy failed to give good results. Few practitioners had started administering broad spectrum antibiotics in combination with antimalarials, often when the patient was suspected to have contracted malaria and typhoid concurrently.

27. Three-fourth and two thirds of the practitioners acknowledged that injections and I.V. drip salines were very popular with their patients, respectively.

28. Over-the-counter purchase of anti-malarials was not as common as made out to be by practitioners in Bombay and New Bombay. A large majority of the people purchased their anti-malarials at pharmacies against a prescription. However, nearly half of the antimalarials and adjunct drugs were purchased in sub-optimal doses. Exit-interviews with customers corroborated the trend noted in drug sales pattern that clearly showed that quinine therapy was gradually replacing chloroquine therapy as the first line of treatment.

Conclusion

The study raised several issues of consequence to malaria control in Bombay and New Bombay. In the first place, the study documented the fact that for the people of Bombay and New Bombay,

malaria meant far more than a disease. It epitomized suffering of various kinds. Given the enormous hardships that malaria has brought to bear on the people of both the cities, it is imperative that urgent steps be taken to control the malady, before the trend worsens. In Bombay, the solution to the problem essentially narrows down to the issue of tightening up of the public health machinery and “resurrecting” the sense of discipline, commitment and coordination that once signified the success of the system. The MCGB has the best of resources at its disposal. It has all the required expertise and stringent by-laws to augment its mosquito abatement and malaria control activities. Alongside rendering the well-know *A. stephensi* breeding sites in the city (wells, cisterns, fountains, leakages, etc) mosquito-proof, it is important that the MCGB focuses its attention on the wanton construction activities in various parts of the city that have led to the proliferation of *A. stephensi* breeding sites. Plainly, if the current situation is to be reverted to the pre-resurgence era, it is inescapable for the MCGB to implement the existing by-laws in the strictest possible terms. At the same time, its efforts must be augmented by disciplined vector control and surveillance activities that should particularly cover the well-to-do localities which offer the most productive and perennial *A. stephensi* breeding sites. Until such time that the efficacy of eco-friendly alternatives (as against insecticides) is established, the existing measures should be thoughtfully implemented. The nature of the malaria problem in New Bombay on the other hand is significantly different from what is witnessed in Bombay. The magnitude of the current malaria problem in New Bombay can be traced down to distorted town planning marked by rampant construction activities with little or no vector control measures, a nascent municipal corporation with limited resources, a failed experiment of contracting out vector control activities to a private agency, an abysmally poor public health infrastructure, and an unbridled private health

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part outlines the various methods used to collect and analyze data, including surveys, interviews, and focus groups. It also discusses the challenges associated with data collection and analysis.

3. The third part presents the results of the study, showing the distribution of responses and the key findings. It includes tables and graphs to illustrate the data.

4. The fourth part discusses the implications of the findings for policy and practice. It suggests ways in which the results can be used to inform decision-making and improve outcomes.

5. The fifth part concludes the document by summarizing the main points and highlighting the limitations of the study. It also suggests areas for future research.

6. The sixth part provides a list of references and sources used in the study.

7. The seventh part includes a list of appendices and supplementary materials.

8. The eighth part contains a list of figures and tables.

9. The ninth part includes a list of footnotes and endnotes.

10. The tenth part provides a list of contact information for the authors and the research team.

sector. Unless the NMMC implements its Urban Malaria Scheme in all earnestness, it is unlikely that the situation will improve in the coming years. As in the case of Bombay, the NMMC also should not ignore those localities and sectors where the better-off sections of the society live. By restricting its surveillance and pest control activities only to the low income areas (slums and villages), there is only a dim chance that the transmission cycle will be broken, and the malaria situation restored to normalcy.

As things stand, measures considered "robust" from an epidemiological and entomological perspective may provide partial solutions to the problem. There is also the suggestion that the malaria problem can be best tackled by increasing the municipal workforce, and thus coverage. At issue is whether to opt for an expansion in the work force necessary to do the surveillance and pest control without ensuring the entomological realities that determine stable transmission pattern - namely, mosquito breeding and mosquito biting behavior, or to ensure the efficiency in the performance of the existing staff. Clearly, an increase in the number of surveillance staff will automatically result in more number of cases being detected, but this measure as a solution that was "long due" is definitely unlikely to resolve the essence of the problem.

In conjunction with these efforts, there is an urgent need to design and implement an intervention program aimed at imparting appropriate malaria related health education to the people of Bombay and New Bombay - especially in the worst affected areas. A cultural analysis of the how people who live in slums, villages, township areas and apartment complexes in the two cities interpreted and managed malaria brought to light the wide gap that exists between lay person's cultural

models of malaria, and the biomedical model that emphasizes the mosquito-parasite-human host triangle. As Coimbra reminds us:

[T]he frequent lack of understanding and cooperation with malaria control program seems to be in consonance with the prevalent folk theories about ecology and origin of malaria (Coimbra 1988, p 257).

Thus the content of health education must necessarily addresses existing local explanatory model about malaria and also take into account the variability in the local epidemiological situations. In this context, it would be worthwhile exploring the scope for involving the NGO sector at some level in malaria prevention.

As this study highlighted, most of the people in Bombay and New Bombay associated malaria with mosquitoes, but made no distinction between the nuisance mosquitoes and malaria carrying mosquitoes. An issue of practical importance that needs to be resolved is whether anti-mosquito measures should be directed solely at the known anopheles breeding sites, or should the nuisance mosquito breeding sites also be included in the strategy. Decisions taken in this regard will have important ramifications for manpower and related resources, and the level of cooperation that can be elicited from the local people. As shown by this study, people associated mosquitoes with accumulated garbage and stagnant gutters. The most productive breeding sites for anopheles mosquitoes, especially *A. Stephensi* such as cisterns, water barrels, storage tanks did not fit into the explanatory models of the people of Bombay and New Bombay. Arguably, people have been naturally associating mosquitoes with piled up garbage and blocked drains. This connection is constantly reinforced by the municipal workers who conspicuously direct their fogging and oiling (larviciding) activities at gutters and stagnant polluted waters which are breeding grounds for

nuisance mosquitoes. Therefore, included in the health education program should be a theme that would help people to understand the life cycle of the mosquito and identify the “real” malaria mosquito breeding sites. The observation of Wince *et al.* (1991) in this context is apropos:

"The whole process of development of health education messages is best conceived of as a dialogue, in which information passes not only from vector control personnel to the community, but also from the community to the vector control personnel...In addition, a successful programme will require that legitimate community concerns such as inadequate refuse collection and lack of a system for waste water disposal be addressed. This should not only make people more receptive to educational messages, but also make the desired behaviour changes easier for people to adopt." (Winch *et al.* 1991; p 386).

It must be remembered that urban malaria control involves the issue of responsibility about environmental maintenance - specifically, who is responsible for maintaining the quality of the “microecology” - the preclusion of mosquito breeding sites. Within the household, the issue often becomes gender sensitive, given that in most communities, female members are more closely associated with water maintenance. In the immediate context, it becomes an issue of households versus the neighborhood, and in the larger context, it emerges as an issue that necessitates the dovetailing of efforts of neighborhoods and the health bureaucracy.

The study brought to light the fact that in both the cities malaria was interpreted as an individual problem rather than a community concern - in that people were dealing with the problem at the individual and household level rather than at the neighborhood or community level. Dependence on technological fixes had indeed fostered this trend and at once diminished the chances of people coming together to tackle the malaria problem at the community level. Therefore, in the current circumstances, the responsibility for controlling malaria cannot be transferred in its entirety to the local people, for it is neither desirable nor practical. The issue of community participation in urban

situations is complicated by the fact that many urban neighborhoods exist in a dynamic flux. The physical and social space of urban dwellers is affected by the constant movement of people in and out of neighborhoods. This is equally true in the case of slums and villages as demonstrated in this study - where local people feel that there are "too many migrants" and "too many outsiders" entering in and out of the traditional neighborhoods. Furthermore, the patterns of architecture in urban areas foster a sense of "anonymity" among its residents. All these factors block the possibility of people coming together spontaneously to do something about a common problem, and instead increases peoples' dependence on formal institutions such as the municipality and technological fixes.

The literature on malaria control and documented experiments with conventional and unconventional antimalarial measures, has emphasized the importance of community participation in malaria control programs (Pant and Rosenfield, 1986; Gramiccia 1981). Successful experiments in this realm are, however, few and are restricted to the rural areas of India. The success story documented by malariologists at the Vector Control Research Centre, Pondicherry (see Rajgopalan and Panicker 1985; 1984), and the Integrated Disease Vector Control (IDVC) strategy without the use of insecticides in Kheda carried out by Sharma *et al.* of the Malaria Research Centre, Nadiad and Delhi (Sharma 1987; Gupta *et al.* 1989; Sharma *et al.* 1991), are notable. However, the relevance of such worthwhile experiments in urban setting is questionable. Such projects could at best be "exemplars" for idea generation, but offer no scope for replication in urban settings.

The caveat underlined by Rajgopalan and Panicker from the VCRC in Pondicherry, with their vast experience in urban malaria control through people's participation is pertinent:

It is well known that no programme will succeed unless the community cooperates and participates in its execution, but it is a myth that a community can easily be motivated to participate in a programme of vector control from which the gains are indirect (Rajgopalan and Panicker 1985, p174).

Furthermore, they have also cautioned us that:

There is now a growing realization that urban mosquito control is a community problem and can be solved only through a multidepartmental approach with active community involvement. The role of the health department is only to take the lead and initiate action on the lines indicated. But the strategy that worked well in Pondicherry cannot be transferred to other areas in its entirety because urban mosquito problems vary from place to place depending on many factors (Rajgopalan *et al.* 1987; p240).

Likewise, the suggestion that permethrin or diethyltoluamide-impregnated window and doorway curtains, and bednets be promoted as a front-line preventive measure against malaria (see for e.g., Makemba *et al.* 1995; Aikens *et al.* 1994; Alonso *et al.* 1991; Nevill *et al.* 1988; Lindsay and Gibson 1988; Majori *et al.* 1987; MacCormack and Snow 1986; Bradley and Greenwood 1986), is unlikely to meet with much success in an urban setting, especially in slums where people are confronted with practical problems such as lack of living and social space, large family sizes, and poverty. Even if impregnated bednets were to be promoted on a large scale in urban areas, it is unlikely that people will do away with the commercially purchased antimosquito consumables, and opt for the net. This is because, in the local people's etiology about malaria, the mosquito is only one of the several causative factors. It is unlikely that bednets will be well received. Moreover, in slums, where large families stay in rooms/huts measuring less than 10 x 10 feet, it is impractical to promote the use of impregnated bednets as a preventive measure against malaria. It

is quite possible that the receptivity of bednets might be higher in villages such as those in New Bombay, where people live in relatively spacious houses. As Brieger (1981) has aptly pointed out:

Lack of understanding is not the main reason why people do not accept new kinds of behavior. It is rather that they are inconvenient, uncomfortable, expensive, produce side-effects, and do not give visible results (Brieger 1981; p13).

Similarly, Gillett too draws our attention to the fact that:

The mosquito net, although simple in the extreme, does require a modicum of sophistication if it is to be used effectively. Also, because it is easily damaged, it has to be repaired or renewed fairly frequently and this pushes up the total cost. Unless the people see for themselves an obvious advantage they are hardly likely to invest in a consumable article merely to avoid insects they have always had (Gillett 1985; p16).

Given the situation, it is imperative that the municipal corporations in both the cities prioritize their antimalaria intervention toward vector control to first of all break the transmission cycle that has set in and is perpetuated by several factors. At the same time, local sentiments cannot be overlooked. In proposing urban malaria control programs, it must be remembered that the benefits anticipated by those who design the interventions may not be apparent to the community and instead outcomes that are immediate and tangible might receive greater importance. In other words, interventions that are congruent with local beliefs regarding the etiology of the illness might be better than interventions that “make no sense” to the local people.

As this study has documented, it would be very important to acknowledge the decisive role that private practitioners and pharmacies play in urban malaria control. If the current prescriptions practices of private practitioners - sub-optimal doses that address patient demands of symptomatic relief - continue, the problem of drug resistance and all that it entails in terms of wider ecological

damage, will aggravate at a faster pace than anticipated. It is essential that the existing drug surveillance system be activated to monitor and restrict the unnecessary use of drugs - the use of antimalarials for non-febrile illnesses, sub-optimal dosing, and using irrational therapies, especially high-level antibiotics in the treatment of malaria - that could promote drug resistance.

In this light, Snow *et al.* (1992) have suggested that:

Public health education is likely to be necessary to improve the consumers' awareness of appropriate doses of anti-malarials. Where the commercial provision of prevention and cure is well accepted by the population, it could form an appropriate means of providing community-based malaria control. Attempting to manipulate the commercial sector as part of an organized control programme would raise many difficult issues but is worthy of serious consideration." (Snow *et al.* 1992; 239).

While it seems logical to suggest that the involvement of the private health sector in malaria control is indispensable, it is equally important to obtain a forehand knowledge of the pragmatics of its participation, and acknowledging its commercial interests and profit motives.

Above all, the influence of larger political and economic factors in urban malaria control cannot be ignored. As Manderson and Abay point out:

"The failure of interventions to reduce the incidence of particular diseases has been associated at times with failure to recognise the importance of social, cultural and behavioural factors in their transmission, recognition and treatment. Operational difficulties facing control programmes, and other variables associated with their implementation, reception, sustainability, and success are often, in fact, not the consequence of a lack of sensitivity to local and cultural conditions but to other factors external to the population - structural, political and economic" (Manderson and Aaby 1992; p839).

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**TATA INSTITUTE OF SOCIAL SCIENCES
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**URBAN MALARIA: A COMPARATIVE ETHNOGRAPHIC STUDY OF
THE LOCAL RESPONSE IN BOMBAY AND NEW BOMBAY, INDIA**

Schedule #: - - -

Date -- -- --

I. Socio-economic and demographic background

1.1 City

Bombay - 1
New Bombay - 2

1.2 Local

Slum - 1
Village - 2
Node - 3
Others - 4

1.3 Name and address of respondent with landmarks

1.4 Sex of respondent

Male - 1
Female - 2

1.5 Religion

Hindu - 1
Muslim - 2
Christian - 3
Sikh - 4
Others - 5

Notes:

1.6 Family Composition

Sr. No.	Name	Rel to HOH	Sex	Age	Education	M. Status	Occupation	Income	Remark

Family Size: -----

Total Income Including all other sources -----

Note: Sex = Male=1, Female=2,
MS = Divorced=1, Separated=2,
Widowed=3, Single=4, Married=5
Pregnant = * Lactating = **

1.7 Length of stay

- 1) In present locality -----
- 2) In Bombay/New Bombay -----
- 3) Inf. regarding shift of residence
within Bombay and New Bombay

1.8 Native place and place from where migrated to the present place of residence -----

N.A.

1.9 Migratory pattern during the last 12 months:

Who visited	Where visited	When visited	Period of Stay	Reason for visit	Whether returned ill or became ill upon return If yes, specify

II Infrastructure facilities

2.1 Type of House (Description)

Whether own or rented. If rented, specify amount and other details

Number of rooms -----

Size of room(s) -----

Sleeping pattern - Whether all members sleep inside

Yes - 1

No - 2

Source of drinking water

Tap outside ----- (specify from where)

Tap inside -----

2.2 Water storage facility

Waste water disposal facility

Garbage disposal facility

Defecation/toilet facility

Electricity

Yes - 1

No - 2

If yes,

Regular - 1

Irregular - 2

2.3 Breeding sites observed by investigator inclusive of potential sites

1)-----

2)-----

3)-----

III Lay health problems:

3.1 What according to you are some of the most common health problems/illness present in your community? (If respondent mentions malaria in the first instance, ask what other illnesses excluding malaria are lay health concerns in the community).

3.2 Has anyone in your family been ill with "fever" in the last two or three months or so?

Yes - 1

No - 2

3.3 If yes, what kind of a fever was it?

3.4 Who was affected? (If more than one person's name is mentioned, write names in order of occurrence. Note that each episode may be different).

Sr. No	Name	Rel. with HOH	Type of fever	No. of episodes	Duration for which each fever episode lasted

3.5 What did you first think it was? (Reference the most recent/current case or episode).

3.6 What did you do when you first noticed the symptoms? (Ask regarding home remedies/self-medication and "wait and see approach").

3.7 Additional Information/notes with respect to 3.4 including whether respondent/patient was given results of blood smear if it was taken:

IV Lay Interpretation and response to malaria
(Applicable to all respondents)

4.1 Do you think malaria is very common in this area? Yes/No, If yes, why do you think so ?

4.2 Was the malaria situation the same when you first started living in this locality?

Yes - 1

No - 2

4.3 If no, how do you think it has changed ? Why? NA

4.4 How would you normally distinguish symptoms typical of malaria from those of other illness that are common in your community? Please give some examples?

4.5 What according to you causes malaria? (Obtain information on "type of malaria" and "types of mosquitoes" if respondent has indicated that "malaria is caused by mosquitoes").

4.6 How according to you is malaria contracted and transmitted? Is there any specific time period during the year, When people in your neighborhood get malaria? Why?

4.7 Has anyone in your house/family been affected with malaria in the last three months?

Yes - 1

No - 2

4.8 If yes, is it the first case in the house? (Probe if malaria episode is a gradation of the fever episode mentioned in item 3.4).

Yes - 1

No - 2

4.9 If no, then please give details of past experience (who was affected, number of episodes, how the illness was managed).

V Lay response to malaria with reference to the last case of malaria that the family has experienced in the last three months

5.1 You said that ----- had malaria in your family. What were the symptoms that were seen/experienced? Who noticed them first?

5.7 Did you take any other action? (Take all details)

Source of treatment	If source is doc. (private/municipal)	Why was it chosen	Nature of treatment received	If tablets taken, schedule of consumption	Side effects experienced	Any other information

Note: Saline/injection/tablets/blood test

5.8 What was the outcome? (Elicit detail description - how long "did" it take for symptoms to disappear and return to normal routine?).

5.9 Health Expenditure with respect to malaria or suspected malaria with respect to last case.

Health expenditure data

Episode No.	Health facilities utilized	No. of visits	*Fees *Medicine	Test(s) expenditure	Hospital fees	Transport	Diet	Others	Total

Notes: (*Doc's fees, Medicines = prescribed and OTC purchase)

Also note expenditure on all cases/episodes during past three months

5.10 How did you manage the expenses?

How finances were managed

Loss of Earning	Recovery of		Expenses		From where money raised			Total
	From whom		Amount recovered		Loan	Interest Paid	Borrowings	

Notes:

5.11 What is the nature of disruption that is/was caused when a member in your family gets malaria?

VI Preventive measures taken at the site of the household

6.1 Do you worry about your family members getting malaria again? Please give reasons for your answer.

6.2 Who in your family do you think is more vulnerable or prone to getting malaria and why?

6.3 What preventive measures do you take to prevent any member of your family from getting malaria? (Elicit description, and probe on attitude toward use of mosquito nets)

6.4 How much does doing so cost you per month? (List out each one).

6.5 How effective according to you are the measures you take in preventing malaria?

VII Perceptions about municipal staff and private practitioners

7.1 What role is the municipal corporation playing to control the malaria problem in your area?

7.2 If the municipal corporation is taking some measure, are they effective according to you?
Has malaria reduced in your area ever since the municipality started working in your area?

7.3 Can you name a few doctors who are practicing in your locality? Who among them is most popular and why?

7.4 Which do you prefer to go to when you or a member of your family has fever? Why?

VIII Community participation

8.1 Have people in your community ever come together to do something about the malaria problem? If yes, what do they do? If not, why not?

8.2 Do you think the situation is going to improve or will it remain the same in coming years? Give reasons?

8.3 What according to you is the best way to handle the malaria problem in this part of Bombay/NewBombay?

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Questions and items of information to make observations
at the site of a private practitioner's clinic

01. Doctor's full name, address with landmarks
02. Age
a) 20 - 30 b) 31 - 40 c) 41 - 50 d) 51 +
03. Sex
a) Male b) female
04. Training/Certification/"degrees" displayed on sign board
(Ask practitioner to give full form of acronyms displayed)
05. Educational background prior to medical training/practice
a) Degree b) Intermediate c) 7 - 10 Std. d) below 7 std.
06. Number of years practice (total and in present clinic/locality)
Total _____ In present locality _____
07. Who else assists practitioner in the clinic? Who performs routine chores?
08. Details about clinic
 - Whether space on rental basis or ownership
 - Size of clinic, number of rooms and for what purpose each room is used (spacious or congested) elaborate....
 - Light, ventilation, water facilities
 - Certificate(s), practicing license, degree(s) displayed inside clinic premises
09. Whether member of any professional body/association? Yes/No

10. Furniture available in the dispensary and how it is arranged.
11. Whether doctor practices at any other clinic(s), consulting room(s). a) Yes b) No. If yes, where? What are the timings?
12. Average number of patients doctor sees per day: (doctor's estimate) (document seasonal variations)
a) 1-10 b) 11-20 c) 21-40 d) 41-60 e) 60 +
13. What typical questions does the doctor ask patient(s), particularly those reporting fever?
14. Average time spent with each patient (10 fever patients - 5 adults and 5 children)
- for general talk (query into symptoms etc)
- for check up
15. What were the symptoms reported by patient to doctor
16. What was the doctor's diagnosis
17. Whether medicine (non-parenteral) dispensed or prescribed to patient
- Name of the medicine(s) if specified
- Whether patient is asked to show the medicines once they have been bought at the local pharmacists
- Whether and how doctor tells patient on how to consume prescribed/dispensed medicines (at what time to consume - before/after meals)

18. What advice is given to the patient?
- Regarding medicine consumption
 - Diet (supplementary food)
 - Preventive measures to be taken against malaria (if diagnosed for malaria)
19. Fees charged
- Whether medicine given in clinic
 - Only prescription given
 - Injection charges
 - Medicine charges
 - Consultation fee
 - Whether gives medicine on credit
 - Visiting fee
 - Saline charges
20. If diagnosed for malaria (suspected) based on clinical symptoms/symptoms reported by patient, whether "blood test" advised? Yes/No If yes, where is the patient referred to (which pathologist/lab)?
21. Remarks regarding how doctor deals with patients
Note whether friendly, indifferent, whether makes doctor-patient difference in status obvious, whether gets easily annoyed with patient(s), any other peculiar mannerism observed

Observation of patients attending a private clinic

01. How many patients were attending the clinic during observation period? Where do they come from? (Locality - nearby/far away). Patient characteristics - how many were children
Adult male
adult female.
02. How many patients were accompanied by a family member/relative/neighbor?
03. Whether patient (ask 3 patients) has come for the first time with the problem or is it a follow up visit? Yes/No
04. To which SES group do they belong to?
05. What sets of symptoms do they typically report to doctor along with fever? (make notes on language of symptom reporting)
06. What questions do patients ask the doctor regarding their illness, and what response do they receive?
07. Whether gone to any other doctor before seeking help from this doctor for the same problem? Why to this doctor? (ask 3 patients)
08. What time do they find it convenient to attend the clinic?
09. How long do they have to wait before they are able to see the doctor? (observe 10 patients)
10. What is their opinion about the doctor's popularity, qualification, efficacy of treatment, check-up, questions asked, advice given, medicines given, fees taken (ask 2 patients) (**exit interview question**)

11. How fees are charged? Whether credit given?
12. Who explains to them about how the medicines (dispensed/prescribed) need to be consumed (schedule, route etc)? Do they understand the schedule? (Observe, crosscheck and make notes). **(exit interview question)**
13. Investigator, provide a graphic description of conversation among patients waiting to see the doctor.

Malaria related questions for private practitioners

01. Do you think malaria is very common (endemic) in your locality? Yes/No
02. If yes, for how long has it been so? Could you cite reasons why it has become so common in this area?
03. Have you noticed a significant change in the number of "malaria" cases attended at your clinic during the past 2-3 years? Yes/No Please give reasons for your response.
04. How do you normally decide whether a patient who has come to you has got "malaria" or not? a) relies on clinical symptoms (algorithms) b) relies on symptoms reported by patient c) makes diagnosis by treatment d) relies on blood smear report e) other indications such as
05. Probe into explanatory models of the doctor regarding malaria (etiology, contraction, transmission, prevention, treatment (including schedule), prophylaxis etc) by asking "How do you explain to your patients "what is malaria, how it is caused, and what should be done to prevent anyone in the family from getting it."
06. Are there "types of malaria" according to you? Yes/No If yes, how do you make a distinction between the different types of malaria you just mentioned?
07. Has your treatment/prescription pattern changed during the past 2-3 years? Yes/No If yes, what medicines have you changed (stopped prescribing - started prescribing)?

08. What line of treatment do you follow to treat malaria when the patient is

STATUS	Drug (brand names)	Schedule/Dosage	Side Effects
Infant			
Child			
Pregnant woman			
Lactating mother			
Adult female			
Adult male			
Any other category* (Complicated case)			

* (e.g. depends on what state the patient is in when brought to the clinic)

09. Do "other systems of medicine" (ayurvedic, homeopathic) work for treatment of malaria? (Alternatively, ask why only allopathic medicines preferred for treatment of malaria).
10. Are injections and drip salines⁷ popular with your "malaria" patients? If yes, please elaborate on your response.
11. What do you give your "malaria" patients via injections/drip saline (e.g. B12, MVit, Avil)?
12. Do you supply drip saline bottles to patients, or do you advise them to buy their own? How much does it cost your patients per drip saline bottle given?
13. If you give injectable chloroquine/quinine to your patients, what percentage of them come back for follow up dose?
14. What is your opinion regarding self-medication with antimalarial in the area that you are practicing?
15. In your opinion, how long does a person suffering from "malaria" (in this area) wait before looking for a different doctor, different medicine?
16. Is there anything special that you do to your patients so as to retain their continued patronage (assuming that the level of competition among local doctors is considerable).
17. What percentage of your patients volunteer to tell you that they have "malaria" by presenting you with typical symptoms such as fever with chills/rigors, headache?
18. What advice do you give to your malaria patients regarding how and what other members in the family should do to prevent from getting sick with malaria? (Note doctor's concern about risk to others in the family)

19. Do you see malaria cases which are "complicated"? Yes/No If yes, what type of complicated cases come to you? What do you do in such cases? (Probe regarding drug resistance in malaria) (ask doctor to define "Complicated").
20. What do you do when a "malaria" patient keeps coming to you again and again for treatment?
21. How do you know if the patient who has come to you is a relapse case or is a case of fresh infection?
22. As a practitioner in an malaria endemic area, what precautionary measures do you take to prevent yourself from getting malaria?
23. What do you suggest needs to be done to control the malaria problem in this area?
24. What is the doctor's opinion regarding government/municipal malaria surveillance/pest control machinery?

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Interview Guide

**Interviews with Customers buying Malaria Medicines
at Select Pharmacies in Bombay and New Bombay**

Name of the Pharmacy

Date

Time

1. Gender M F 2. Age 3. Residence H M L 4. Education 5. Occupation
6. Do you normally buy all your medicines from this shop? Yes No

7. What medicines have you bought just now?

Sr. #	Brand Name of drug	Qty	\$	Presn	Date	Durat'n	OTC	Self-Proxy
1								
2								
3								
4								
5								
6								
7								
8								
9								

OTC codes: 1. Presc'n 2. Sympt's 3. Name 4. Old paper/chit 5. Sample 6. any other

8. Who are you buying these medicines for? (refer to each Sr. # in above table)

- a. Self
- b. In proxy for family member. Who? -----
- c. If customer is a domestic servant, for whom? -----

9. What has happened? What are the symptoms?

Note on customer-provider dialogue:

10. How long has the patient been ill?
11. When was the last time a doctor was seen for complaint?
12. What did doctor say has happened?
13. How long these medicines need to be taken?
14. Has the patient ever used these medicines before? Yes No
If yes, when? How long?
15. If medicines were bought with prescription, whether partial purchase made? Yes No
If yes, why?
16. Do you know the dosage/schedule, or will you be going back to your doctor to show these medicines and take advice? Yes No
17. If medicines bought OTC, who recommended? Why doctor not consulted?
18. How long do you or your family members (if the customer is not patient) wait before taking any medicine when symptoms such as fever, bodyache, stomachache/diarrhea, vomiting are experienced?
19. Do any of the medicines you have bought just now have any "side-effects" (based on past experience)? If yes, which medicines? Please describe what happens.
20. What do you do to counter the "side-effects"?
21. Who else in your family has/had this illness?
22. Do you/your family members do anything to prevent this illness from recurring?

More details from customers/patients reporting chronic problem(s)

23. When was this illness first experienced? What happened (probe details...elicit a narrative if customer is willing to continue with the interview)?

24. Have medicines and dosage changed? If yes, please give details.

25. Whether medicines taken as per schedule or only until symptoms subside? Yes No. Why?

26. Whether dosage self-regulated? Yes No. If yes, why?

27. How much money have you spent so far for treatment of this illness? (Probe to find out whether the money factor matters in regularity/compliance in medicine taking).

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Drug Sales Data

Date

Drug Sales Data

Date _____

[illegible]

OTC codes: 1. Presc'n 2. Sympt's 3. Name 4. Old paper/chit 5. Sample 6. any other

